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ABSTRACT

These proceedings contain four presentations and other materials from a conference to provide public schools with information about change so they can take a leadership role in educating for the future. The opening address (Richard Berendzen) discusses changes affecting education and changes in education. "Megatrends: Implications for Education Leaders" (Michael H. Annison) addresses the fundamental restructuring of the United States from an industrial society to an information/service economy and other economic and demographic shifts that affect education. "Inventive Reasoning: Processing Knowledge into Understanding and Creativity" (Robert E. Sparks) promotes three aims for education: teaching of facts, techniques, and theories; developing reasoning skills to understand underlying meanings; and developing inventive reasoning skills to generate new possibilities. "The Schools and Planning for the Future: Some Basic Considerations in the Process" (Joseph F. Rogus) identifies a set of "school in society" and "school in school" considerations for futures planning. Other contents include "Education in the Future," a background paper prepared for Ohio's Commission on Educational Excellence; "Planning for Change: University Circle Incorporated," the narrative that accompanied the slide presentation about the role of the University Circle in Cleveland; summaries of action sessions; local action plans; and listings of participants. (YLB)

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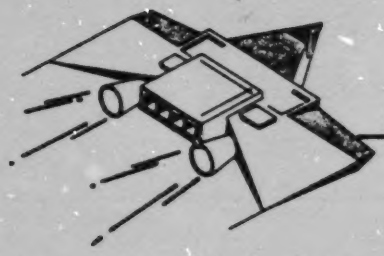

IGNITION

PROCEEDINGS OF CONFERENCE 1

MAY 5-6, 1983 CLEVELAND, OHIO

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PROCEEDINGS OF CONFERENCE 1: IGNITION!

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May 5 - 6, 1983

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PREFACE

The pace of change and the types of changes in our society have created a unique opportunity for public schools to take a leadership role in determining how to educate children and youth for the future. As we face the fact that many existing educational programs and practices do not meet the needs of today or tomorrow, there are significant reasons to be optimistic about meeting the challenges of change.

"Fueling the Education Explosion" is designed to help us understand what the future will be so that we can anticipate and SHAPE the changes. As school and community leaders, we can begin to see ourselves as developing and determining what the trends in education should be in 5 years, 15 years and into the 21st century.

Important ingredients for achieving the project's goals are: current information and knowledge from recognized thinkers, futurists, communicators, inventors, scientists and educators; planning techniques and strategies that include creative/productive thinking and networking so that each district can become a resource for the whole group.

Most important and necessary to the project are the participants. The design calls for teams to represent a school district or other organization. For example, a participating school district is encouraged to send a team of three to five members including the following: superintendent; school board member; principal; teacher; interested community representative.

These teams operate in various ways. During conferences, small groups composed of 3 to 5 teams focus their planning efforts upon common needs, goals or problems. Each group has a leader and a recorder trained specifically to help participants use the problem-solving and inventive reasoning methods in the project model.

Between conferences, there will be a continuing exchange of information and support among the school district teams regarding the successes and failures of their specific projects. The dissemination and networking

will be enhanced via the published proceedings of each conference.

In preparing this first conference publication, it is apparant that "Ignition" did occur. The 200 conferees represented teams of leaders from school districts, higher education institutions and business throughout the state. We used this opportunity to confront change in advance of being consumed by it. We heard and we learned from the futurists and educators who were our major speakers....and we began the processes of long-range planning and networking in the Action Sessions.

Beginnings: the feedback so far is exciting and encouraging. Some of us are asking what impacts will today's decisions have on the problems today and over time (5 years, 15 years, 25 years). We are wondering how the trends and issues raised in the F.E.E. conference will be related to today's crises and decision-making.

We hope that each of you will find the information in "Proceedings" useful and stimulating, particularly as we all prepare for the second conference, "Intelligence & Schooling" on Nov. 17 and 18, 1983.

Mary Gardner

Mary Gardner
Conference Director

August 1983

STEERING COMMITTEE

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CLEVELAND HEIGHTS-UNIVERSITY HEIGHTS SCHOOLS

Widely acclaimed for its academic programs, Cleveland Heights-University Heights perennially places among the top ten districts and private schools in Ohio in the number of National Merit Scholarship semi-finalists. The district's music program is well known, and more than a dozen Heights High graduates are now with symphony orchestras. The district offers an integrated, structured program for gifted and talented students from pre-school through grade twelve.

The schools enjoy outstanding community support, with the second highest property tax rate in Cuyahoga County. The racial, ethnic and religious diversity of the district is emphasized in the high school's multi-cultural center, which brings in dignitaries, resource people and displays in an effort to promote understanding and appreciation of one another.

Other programs include an elementary "magnet" school featuring individualization with emphasis on math and another magnet featuring traditional education with emphasis on French, Spanish and computers; an alternative school program at the high school for students with "freer" learning styles; programs within the district and in cooperation with other districts for vocational education and education of the handicapped; a wide range of sports and extra-curricular activities; pre-school programs through the Community Service Department; extended kindergarten, an all-day program for the children of working parents; and a comprehensive adult education program.

The district serves University Heights, most of Cleveland Heights and a small portion of South Euclid; 1 high school (grades 10-12), 3 junior highs, 10 elementary schools; enrollment 8,500, modest decrease over next five years; 400 teachers; pupil-teacher ratio approximately 20 to 1; 72% of graduates go to college.

Cleveland State University

College of Education

CENTER FOR THE STUDY OF INDIVIDUAL DIFFERENCES IN LEARNING AND INSTRUCTION

The Center for the Study of Individual Differences in Learning and Instruction was established in 1980 within the College of Education. It functions as a forum for bringing together College and University Faculty with interests in the cognitive, affective, social, and physical differences between learners that influence the nature and effectiveness of their educational experiences. Issues identified for emphasis may be based in a single area of study or may be interdisciplinary in character, may vary on the continuum of basic to applied research and may variously combine programmatic research, evaluative, and developmental emphases. A special focus is directed toward study of those problems characteristic of the urban environment. Proposal preparation this past year has involved comparative study of the consequences of stress among learning disabled, gifted, and typical children; the evaluation of gender and culture fairness in microcomputer educational software; implementation of the effective schools literature; and a computer camp for gifted and talented junior high school students.

The Center is a loosely coupled organization designed to provide leadership in the delivery of support services to faculty. The Center is not an administrative unit but carries out its activities within the existing departmental structure. Sponsored activities this year included a series of seminars in the new methodology of meta-analysis as well as a colloquia series featuring faculty research on such topics as feedback in counseling, learner performance across the life cycle, learning profiles of low birth weight children, and reader literary response patterns.

UNIVERSITY CIRCLE, INC.

University Circle is a unique blend of cultural, educational, medical, religious and social service institutions situated on five hundred acres of Cleveland's East Side.

University Circle Inc. is the planning arm and catalyst for the Circle. It accomplishes tasks no single institution could do on its own-it derives its strength from the organizations it serves. Its commitments include planning and area development, acquisition and improvement of property, parking and busing, public safety and security, community and institutional relations and the preservation and enhancement of the Circle's natural beauty.

A part of what we do is to help school districts develop their concepts into programs.

FINANCIAL SPONSORS

The Standard Oil Company (Ohio)
Sondra Hardis, Program Associate

The Martha Holden Jennings Foundation
Joan Johnson, Program Director

A Special Acknowledgement and Appreciation to:

The Cleveland Museum of Art
The Garden Center of Greater Cleveland
The Western Reserve Historical Society
The Crawford Auto and Aviation Museum
Cleveland State University

OHIO SITE, EDUCATION POLICY FELLOWSHIP PROGRAM
Institute for Educational Leadership

The Cleveland program is the first urban, non-capital EPFP site and is funded by the Cleveland and George Gund Foundations. The site was established in 1976 and is designed to strengthen educational leadership in local school districts, human services agencies, and institutions of higher education.

Twenty-two Fellows participate in the 1982-83 program and represent a broad spectrum of city, county and state agencies as well as private organizations. The list of sponsoring agencies is impressive: seven public school systems (Berea, Cleveland City, East Cleveland, Cleveland Heights-University Heights, Euclid, Nordonia Hills, Vandalia-Butler), Cuyahoga Community College, Western Reserve Academy, Lorain County Community College, Case Western Reserve University School of Medicine, The Foundation Center, Federation for Community Planning, Office on School Monitoring, Ohio Department of Education, the U.S. Navy Finance Center, and the Cuyahoga County Board of Education.

The education component includes sessions on foundation support for education and educational change and on the policy process as viewed by advocacy groups, administrators, public servants and the business community. Other themes include issues of higher education design, school desegregation, women in leadership roles, delivery of human services and the politics of education.

Training activities include a site visit to Columbus to study the legislative process and the perspectives of legislators on education issues. In addition, EPFP hosts several seminars annually to provide the current Fellows with an opportunity to meet the Cleveland alumni/ae and to discuss policy issues with Cleveland sponsors.

The Cleveland site is affiliated with the Shaker Heights City School District. The Ohio site coordinator is Dr. Mark Freeman, Director of Research, Development and Evaluation for Shaker Heights City School District.

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OPENING ADDRESS

May 5, 1983

DR. RICHARD BERENDZEN

President

The American University
Washington, D.C.

OPENING ADDRESS*

by Dr. Richard Berendzen

Oxymoron. An oxymoron is a two-word phrase used routinely without much thought and yet it's incongruous if you stop to think about it. For example, "jumbo shrimp," "airline food," and "military intelligence;" some folks add "academic integrity" and still others include "Washington wisdom." Washington did have wisdom almost a half century ago, under President Calvin Coolidge. Will Rogers once said about President Coolidge, "He don't say much. But when he does, he don't say much." Mr. Coolidge did say something profound at least once. He said, "The principal explanation for high unemployment in the United States today is that a large number of people do not have jobs." That's Washington wisdom! Well, sometimes we think there is Washington wisdom, but I'm not here to bring it to you. Instead, I want to talk with you today about education -- elementary, secondary, and higher education in the United States.

Last Fall a phenomenal thing happened in United States higher education, mirroring by its occurrence both the national economy and the national mood. That occurrence was a six percent increase in community college enrollment nationwide. Simultaneously, enrollments in private universities and colleges declined by about four percent. These facts indicate a growing parochialism --- a narrowing of vision, as parents and students alike were so concerned about the economy that they elected to save not only on room and board, but also on tuition. And so they stayed close to home.

There are other shifts going on as well, and they are particularly obvious at the higher education levels. The shift from the humanities to the professions is another echo of the economy. It didn't happen just this year; it's been building for the last decade or more. For years, enrollments have been decreasing in history and art, music and philosophy--

*Dr. Berendzen spoke extemporaneously. This text was edited from a transcription of a tape recording of his remarks.

the subjects that teach us who we are, how we became who we are, how to laugh and cry and understand ourselves. At the same time, enrollments have shot up in the professional fields -- computer science, accounting, business administration, law, medicine. All of this is understandable, but it also is regrettable, for the truths revealed through a liberal arts education should enrich and encourage us throughout our lives.

The economy has had profound and long-term effects on our thinking -- so deep and enduring that most of us do not even remember when they began or realize how great they have been. The decade of the 1970's was economically unique in our nation's history. Inflation was first measured between 1910 and 1920. From 1970 to 1980, the national inflation rate increased more than it did from the time it was first measured until 1970. Consequently, if you are just graduating from high school, you have lived all of your life during the most inflationary period this century. Your only economic memory is of the news media, your parents, and all the other authority figures telling you that the economy is bad; you must worry about costs; you have to prepare for a job.

A generation ago, when entering freshmen nationwide were asked why they were seeking an education, the predominant answer was, "I want to learn who I am," "I'm trying to find myself in the larger picture," or "I want to determine in the course of history how I fit in and how I can contribute." That cluster of answers made up the first seven replies. When we ask the same question today, however, those answers drop to number eight; the first seven, instead, are variations on the reply, "I want to make money." Today's young people are basically not interested in "Whom and I?", "How can I contribute?" or "How do I fit in?" They want to know, instead, "How much does it cost?" "How long does it take?" and "Can I get a job?" All of this may be understandable in light of the economy, but the educator's role must be to think -- and to make others think -- not only of today, but also of the future of our society.

Underlying much of this is not only the economy, but also demographics. During the Second World War, the birth rate dropped as many American men were abroad and people at home were preoccupied with the

war industry. But when the war ended, the birth rate increased dramatically from about 1945 to 1960. School enrollments increased a few years later. And it was quite predictable -- simply by watching the sales of Gerber baby food, if nothing else -- that eighteen years later higher education enrollments would bulge. Sure enough, from 1965 to 1975 higher education in the United States grew faster than at any other time in its prior history. A community college was built on the average of one per week during that period -- it was absolutely unparalleled.

But, by the early 1960's, the birth rate changed from an average of 3.2 children per family to 1.8 per family, and along with that had to come another enrollment change. Actually, the matter is more complex than this, since not all sectors of the nation experience the demographic shifts equally. The industrialized Northeast in particular was hit hard; about a generation ago, many of that region's child-bearing-age population migrated to the Sun Belt. Further, different segments of the population have different birth rates. So what we will find by 1990 is that the composition of the classroom will be markedly different from what it was five or ten years ago.

There also has been a change in perspective on the issue of who society educates. A hundred years -- even seventy-five years ago -- the role of education, it was thought, was to prepare the children of the elite to be the elite. Students were overwhelmingly white, male, and upper-class. Then came the land grant colleges and Populism. During the 1950's, general education ruled, reflecting our national concern over the horrors of Nazism. Many educators felt that we had a responsibility to educate liberally and broadly; that was why the distribution requirements of general education were introduced in the 1950's. And the G.I. Bill then had enormous effect on education, probably more than any other single thing this century.

Then came the 1960's. We had been jolted in the late 1950's by Sputnik, and for a while the nation responded with funds and concern. But I'm afraid the national attention span is only weeks, or at most,

only a few years.

And, in part, that's what worries me now about the latest new concern over educational rigor and change. I fear that funding will not come or, even if it does, it will not continue. What worries me most about U.S. education is the lack of resolve and committment over time. Education is not glamorous; it is not sexy; it usually does not grab headlines; it usually not does promote you as a political figure.

But there is a momentum building now. In the 1980 Presidential election, you remember, there was little said by any major national political figure about education, except for references to abolition of the Department of Education. But even those comments were tangential. Today, all of the major candidates have indicated that education will be one of the key campaign issues along with the national economy and national security. Make no mistake about it: in 1984, education will be one of the nation's main agenda items.

There is good political reason for that: a large fraction of the delegates to the Democratic National Convention are members of the National Education Association, making the NEA the largest single political power block. Whether that is good or bad, you can determine for yourself; it simply is fact. So I expect that in the next year or two, we will hear a great deal about education. There will be much talk by many leaders of our society, and that's probably good. I welcome it. What concerns me is whether it will be sustained -- by politicians, educators, parents, and all others who presume to care. What we must have is not only resolve and standards, but also commitment over time. And that is difficult. To do so will require keeping up interest, month after month, beyond 1984 and 1988, to the end of the century and still beyond!

The 1960's brought new and overdue social policies -- women's rights, civil rights, and others. In the early 1970's, we were traumatized by Watergate and inflation. And new dynamics came into play in higher

education as well, as we received the largest influx of foreign students our nation had even known. The developing world, was, in fact, developing, and new oil monies aided many Third World countries. At the same time, other changes were coming, too. Students' career interests were changing dramatically. In the 1950's, humanities were popular. In the early 1960's, science and technology took the lead, following the post-Sputnik concern. By the late 1960's, however, the inward-looking fields -- sociology, psychology, and the rest -- became dominant. But the students of the 1970's were driven by the economy, headlines telling about Ph.D.'s who were driving cabs because they could not find jobs. Students flocked to the professional fields. Following Watergate, it seemed that every teenager with a typewriter wanted to go into journalism, seemingly unconcerned that a few years later there simply would not be enough jobs for them.

And that brings us to the issue of thinking ahead. One of the sad facts of education is that the counselling most high school students receive is at least three to five years out of date. What students and their counsellors alike rarely understand well is that they are preparing for the future, not for last year. Today's students must understand the fields of the 1990's and the beginning of next century -- not what happens to be popular today. Yet such outdated counselling happens over and over. A few years ago, more than half of the entering freshmen at Yale declared themselves to be pre-med majors. At that rate, there are but two possibilities: either a lot of Yale graduates ultimately are going to be disappointed or the nation is going to have a shortage of sick people!

Also in the 1970's, we began to distrust traditional education. In its most deliciously cynical form it's been stated this way: "The only value of a classical upbringing is that it enables you to despise the wealth that it prevents you from obtaining."

With this narrowing of student interest, we found many sad things happening. A generation ago, more than 35 percent of all colleges and universities required some proficiency in foreign languages for admission.

Today, only six percent do so. What is cause and what is effect here is hard to determine: it's hard to know whether high schools dropped their foreign language requirements because they knew universities did not demand them, or whether universities dropped theirs because they knew high schools were not requiring them. Whatever the case, this has not been a partnership in nobility. While our nation has become more complex and interdependent; while we have become deeply involved in international business partnerships; while the world has become more dangerous than ever before; while we live with nuclear terror; we have become more parochial than at any other time in this century. That is bewildering, strange, and wrong. Not only have we dropped foreign languages, but also we have dropped foreign studies and cut back on junior-year abroad programs. George Will put it well a few years ago when he remarked that we teach our young people body English but not the location of Europe.

You probably already are familiar with the data about science, technology, and mathematics teachers. But permit me to remind you of them, because they are so chilling. Last year, approximately half of all new math and science teachers hired in the United States were either unqualified or uncertified. In high schools nationwide this year, approximately one-third of all people teaching high school science and math are unqualified for what they are teaching. Two years ago, all of the colleges in Ohio combined reportedly graduated the grand sum of one high school math teacher. Things are seriously and grievously wrong here. And it is easy to understand why this has happened when you consider the salaries and the opportunities of the teaching profession. Without question, one of our society's greatest needs is to recognize that education is not a purchase but an investment. It is not for 12 years or four more; it is for a lifetime. Therefore, the nation -- from parents to towns, from states to the federal government -- must invest in it. It will cost to improve, in money, in time, and in effort. Part of that monetary cost has to be in salaries and benefits to teachers so that teaching can become a genuine, desirable profession.

But there is another side, too. Some of those currently in the teaching profession should not be there. The teaching profession has to learn how to police itself better than it has in the past. If it does not, it will never gain the respect and support it needs from society. Nonetheless, a poll published last week in the New York Times indicated that 81 percent of the people polled would support higher tax levies, if those monies would bring them better public schools. I believe there is a national interest and concern -- we have to identify it and act on it.

In the last generation, our nation has made remarkable achievements in education. We should applaud them, acknowledge them, cherish them. In fact, I suspect in the year 2000, as historians look back over this century, some of these achievements will stand as a benchmark -- a hallmark of us as a people and of our time. More Americans have gained access to education than in any other country in history. Today, in higher education, we have students in abundance from both sexes, many nations and all ages -- and that is profoundly good. Many people who traditionally have been excluded from our system now have been welcomed in. There still are exclusions, but at least the trend is in the right direction.

Totally separate from that, however, other things have happened, too. During the last two decades, by almost any reasonable measure, the overall academic rigor and standards of our public schools have not just fallen --- they have plummeted. You are aware of the drop in average standardized test scores. And you probably also know that just this year, at last, the decline stopped and there has been a miniscule increase. I'm delighted to see it, although the increase is so small that we cannot be sure what it means. But there's more: one of the midwestern states, a year or so ago, discovered that it had given a battery of tests 50 years ago to incoming freshmen at the state university. These tests simply required ability to read and comprehend and respond to the questions. Well, someone had the interesting idea of giving the same exam to the incoming freshmen

at the same university today -- the same group geographically, the same socio-economic strata of students. What they found was that the average score of today's students was a standard deviation lower than their counterparts a half century ago --regardless of the billions of dollars in federal funds, the teaching aides, and all the rest. Something is profoundly wrong. Last September, approximately half of all freshmen English and mathematics taught in universities and colleges nationwide was remedial. Universities were teaching 12th, 11th and 10th grade material. New editions of standard textbooks have been revised reducing four syllable words to three and two to one, just as there has been a general diminution in the quality of the language across the country. And some colleges intentionally have adopted high school textbooks.

At the same time this has happened, average grades have risen to their highest levels ever. In many schools today, a B+ is class average. In universities, as recently as two years ago, a B+ was class average. I would argue that when everyone is honored, no one is honored.

Perhaps saddest of all at the university level is that those people who seek out the field of education as a career, enter, on average, with the lowest test scores and the lowest academic record of any group of students. Yet, their college grades are among the highest in higher education. Again, something is wrong.

We developed in our society during the last few years the notion that to hold back a fourth grader would be cruel and inhumane. Well, I would say that it would be cruel and inhumane to pass a fourth grader when you know that person cannot handle fifth grade work. But it's difficult for the teacher to stand strong on such matters without the support of the principal, the superintendent, the school board, and the parents.

We adopted a number of strange philosophies in the last 15 years. The great scientist, Leo Slizard, put it well: "Look, I'm willing to

accept the populist notion that one fool is as good as one genius," he said, "but I draw the line when you then try to convince me that two fools must be better than one genius." The fact is that some people know more than other people, and some people can teach other people. if we will only let them.

We even accepted the notion in higher education that somehow the entering students, by virtue of their youth, possess a special virginal purity, a wisdom and insight that the older people lost long ago. And a topsy-turvy anomaly began to occur: rather than the young people learning from their elders, the older generation began to emulate youth, even by dressing like them, talking like them, and thinking like them. In few societies in the world would that be understood, much less accepted.

We also adopted a few years ago the concept of teacher as friend. Now, who would be so cold-hearted as to say that a teacher should not be a friend? But there are all kinds of friends. And I would say that the best kind of friend is the one who would have the courage and integrity and love to look a youngster squarely in the eye and say, "You don't know it well enough; do it again." And to say to a child, "Even though I don't want to, I've got to hold you back."

In all of this, it's easy to point a finger; it's easy to blame many people! And probably the ones blamed most frequently are school teachers. They are an easy target. In fact, school teachers deserve some, perhaps much, of the blame. Some of them have been ill-prepared; some have put their job benefits above their students' education. But, in my view, to blame the teacher alone or even principally, is simply wrong. The teacher has been expected not only to teach academic fields but also to inculcate the very desire to learn. The teacher even has had to maintain order and prevent violence while trying to instruct. Think of that for a moment! In what other areas of society would we expect that? We do not ask the museum curator to leave her work, or the doctor to run out of the operating room and maintain order in the hallway! Yet, somehow, we expect the teacher to do so. The teacher

is underpaid, under-respected, and under-supported. It's simply wrong. The principals and superintendents have to support that teacher, have to be willing to face possible litigation and angry parents.

And, then, it all really comes down to that cardinal part of all American life -- the home, the family, the parents. If there has been any single segment of society that has disengaged itself from the struggle, it's been mom and dad. Part of the anguish, of course, is the large number of single-parent families. That, unfortunately, is a part of the dynamics of today. But it's not just those families -- it's all families. In the last several years, average PTA attendance has dropped to new low levels. Parents are preoccupied with the economy; they're worried about mortgages and inflation; they're worried about holding down two jobs.

I'm all for mothers working as well as fathers -- it's good for everyone. But I would say without reservation that someone, mother, or father, or ideally, both, must be doing the parenting. It's not the role of the parent to do the homework of the child, but it is the role of the parent to say by words and by actions: "I care. I want to know what you are doing in school. Where is your homework? Will you read to me? Let me see the paper you've written." Not to rewrite it, but to say: "In our family, a rough draft won't do. Do it again. That's sloppy work." The teacher should not need to say that --- the parents should.

We've got to awaken the American people. To do so is a responsibility of the news media, educators, and political figures. And I'd like for the President of the United States not merely to take about tuition tax credits and prayer in school and abolition of the Department of Education, but also to take to the American people the most vital message of all: That they have a precious resource called children. The most pressing thing our country must do, even beyond preserving the peace, which of course is essential, is to ensure tomorrow. And

that can be done only through education!

Besides blaming teachers for the state of education, another common villain is television. We now are living in the first genuinely electronic generation. Do you realize how much television we Americans watch? By the time the American child is six years old, on average, he will have spent more time watching television than he will spend talking to his father in his lifetime. On average, we spend more time watching television than we spend on any other thing except sleep.

Television can have enormous influence, for good or ill. My problem is not with the youngster who turns it on, but with the parent who fails to turn it off. The button turns both ways. There are many good things on TV that can be instructive and enriching, and they are not just on the educational channel.

Television is possibly the most powerful thing the human mind has yet invented. Let me give you one small example of its power. The TV show "Happy Days" purports to tell all about life in the 1950's. As you know, one of the stars of the show is a young man called "the Fonz," who wears a black leather jacket. He's the youngsters' idol. This show routinely attempts to slip in subtle, positive messages for children. In an episode about a year ago, the Fonz took out a library card. The other kids in the show said, "Let's go to the malt shop and party and dance." But the Fonz said, "No, I just got a new library card and I want to use it." Kids all over the country then said to themselves, "I'm going to go to the library, just like Fonz." In the next two months, the number of 10 to 14 year olds taking out library cards increased some 450 percent! Such is the power of television.

In the last few years, we've also witnessed the advent of the ubiquitous video games. If I believed they teach manual dexterity or something else useful, I'd be all for them. It is possible with

them to learn some of that; however, in fact, these games generally are wastes of time. It would be one thing if they were replacing television; unfortunately, they are an add-on. Our youth are more concerned in protecting us from barrel-dropping gorillas and blowing up galaxies than in running or chasing a dog or throwing a ball. Not only are our kids losing ground academically, but even their physical prowess is diminishing. Recently, a physical exam was made of 10 to 15 year olds. You can guess it: They cannot run so fast or jump so high, nor do they have the endurance of their counterparts a generation ago.

Now, I have a family. I have an 11 year old daughter, and she too loves the video games. She is an average, typical, normal-child prodigy. And I've learned that no one over age 15 should ever, under any conditions, play video games with anybody under 15. My daughter challenged me to one a while back. I mustered all of my technical background and I made a score of 940; her score was 116,000. That is humiliating!! I asked for a handicap, and she outdid me just the same. So I had her play with her left hand. She still destroyed me. She has my genetic defect of near-sightedness, so I made her play without her glasses and with her left hand. (I know it's cruel, but kids have to learn about the real world. Where better than at home?) She still beat me! So, I'm down on video games.

But I am convinced that younsters must learn to use computers better -- and not just for PacMan. They should be introduced to computers early in school and should use them throughout. When I say youngsters, I mean all youngsters. Approximately half of our population is being told -- directly or indirectly -- that, because they happen to be female, they cannot understand technology. It simply is not so. In our society, we have developed the myth that science, mathematics, and technology are not part of the female world. We have opened doors for females to business, law, and a host of other fields. But even today -- when we have landed men on the moon, have sent probes past Saturn, and have delved into the gene -- roughly half of our talent is not involved in the cutting edge of tomorrow's technology. That is profoundly wrong.

What causes this comes from mothers and fathers and school teachers; from textbooks showing boys using computers but not girls; from universities failing to stress that women, too, can teach those fields. We clearly have much to do.

Now, let's compare American education with that in a few other countries. I had the pleasure a year ago of chairing a national commission on foreign student policy in the United States. I have visited many nations around the world, including the rocky, isolated island of Taiwan. Logically there should be no country there. It has little land on which to grow anything; it's in the ocean, next to an enormous adversary. Yet, it survives. I was taken to meet the Minister of Education, heads of universities, and top government officials. One day, I asked if I might visit a school. Of course, they said yes. I arrived at the school at 9:00 a.m. to find that the youngsters had come at 7:00. From 7:00 to 8:00 they clean the school; custodians don't clean the schools, the children do. The first thing I noted upon entering was that there was no litter and no graffiti. None. You see, when you clean the school, you don't mar it. The children go to school from 8:00 a.m. until 4:00 p.m. six days a week, 11 months a year. Taiwanese youngsters undoubtedly need to laugh and play and run and jump, just as ours do. And they do so. But they're also learning, in addition to their academics, a most profound lesson: The education of work, of discipline, and even of example --- of working hard, just as their parents do.

When we have papers submitted to us that we know are inferior and the students knows it as well and we return those papers with unwarrantedly high grades, we have taught more than intended -- not about the subject but about how to manipulate the system. And that, I would submit, is what the students remember long after they have forgotten the subject.

In what city do you suppose you would find the highest average SAT scores? It's not Cleveland or Boston, Washington or New York -- it's Hong Kong. The Chinese youth there out-perform dramatically,

especially in mathematics and technical skills. Among the industrial countries, American students no longer place first or second or even third; we rank closer to seventh, eighth, or ninth. Our allies and adversaries alike have outpaced us. On average, a Soviet child will have ten years of geometry and related mathematics by the time he graduates from high school; in the United States, on average, it will be one year. At the present time, one-third of our nation's high schools do not even offer college-preparatory mathematics.

What is needed in our country is an overhaul of monumental proportions. The school day must be longer. Important, but non-academic subjects -- driver education, preparation for marriage and life, sex education, and a host of others -- should be offered, but not during school hours. They should be given after school or even on Saturday. The school day must be lengthened, the school year, too. This will place greater responsibility and burden on teachers, parents, and youngsters. But it must be done. Also, teachers should be paid more. In fact, the cost to do all this will be about a 28 percent increase in the budget for education and a 25 percent increase in the salaries of teachers. That's dramatic! Who will pay it? The responsibility lies foremost with the parents, the local school districts, the city, and the state. The principal beneficiary of education is the students, and therefore the family. But this is not the only beneficiary. All of society benefits. Therefore, it is a national responsibility, too. If we can recognize this and respond to it, the system can be saved; this can become our most noble day.

What is needed -- not only in education, but in all of American live -- is a re-dedication to a personal, institutional, and national sense of pride. It is for that reason that I was honored to be asked to join you today. I know that you in this room are precisely the people who care enough -- so much that you take the time and spend the money to meet in sessions such as this. I genuinely salute you.

MEGATRENDS:

Implications for Education Leaders

May 5, 1983

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Implications for Education Leaders

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(*Mr. Annison's presentation was tape-recorded. This article is a transcribed version of his remarks.)

The main point of the book, Megatrends, is that there is occurring today a fundamental restructuring of the United States. The trends and the data that we've been looking at the for the last several years suggest that this country is undergoing a complete transformation, from an industrial society whose heyday occurred in 1950 to an information/service economy which is already a reality today. It's easy to misunderstand what has been going on because the country has undergone only one other such transformation, and that one happened about 100 to 150 years ago.

In the process of this transformation, there are winners and there are losers. Losers say things that suggest they don't quite see what's going on around them...and they affect schools, the business community, and almost every other institution in our society.

One of the first things that losers suggest is that they can do what they're doing more efficiently, faster or better...that everything's going to be all right. It's a point of view which advocates that what was done in 1970, 1965 and so on, is valid and is still the better way.

The loser's second line is that even though there is a lot of change going on elsewhere, it isn't going to affect us in good old Cleveland, or Shaker Heights, or even in the state of Ohio. My family, my business, my institution will be all right while everything else changes. The third loser's line comes from educators and the health

community, and it says, "They don't understand us." It's the belief that if the public really understood these institutions and industries, they would support them.

Actually, the American consumer is as well educated as any population in the world. The most striking recent example occurred when banks offered money market funds in late 1982: within 30 days more than half the savings accounts in the United States had been converted. Similarly, the American population basically does understand the schools, but they reject what the schools are doing. There are alternatives which suggest that the premium on learning has risen in this nation, but it is not associated with the public schools.

There is also an unfortunate piece of misinformation coming out of Washington, New York and perhaps other cities which says that the economy is coming back. The economy in the United States is not coming back. We are not in a recession; rather, we are changing to an entirely different economy. If you believe we are in recession, you try to save the steel industry, you try to save the automakers, and you try to rebuild the industrial fabric of the country. But that clearly is not competitive, so what we're doing in many parts of the country is building an entirely new and different economy based on service companies and information companies.

The losers are becoming more visible. The Penn Square Bank essentially went bankrupt in Oklahoma City because the people in Penn Square thought there was a future in energy in this country. They invested about 70 percent of their portfolio in energy; and then the energy curve flattened and stayed flat for five or six months..and it will remain so probably during the next decade.

Similarly the people who ran Braniff Airlines totally misunderstood the industry they were operating. While they thought Braniff was a transportation company, Purolator, Federal Express and others clearly demonstrated that the airlines were a key facet of the communications

industry. Those companies built a four billion dollar business on that simple idea, while Braniff went bankrupt.

The Savings and Loans have dealt with significant problems simply by changing the English language. Rather than bankruptcies, they talk about mergers---but the two mean the same thing. The steel companies, too, are having their share of difficulties. They are now operating at about 40 percent capacity and will not rise much above 50 percent capacity in this country under the best of circumstances.

On the other hand, we have a lot of winners, and the winners are really different. Two 21 year old California hippie, wierdo, commie, pinko kids (or whatever you want to call them) came up with the very simple idea that a computer could be used by people such as all of us in this room and thousands of others. They built the Apple Computer Company on the idea that computers could be more than word processing machines in offices. Mary Kay Cosmetics introduced the idea of door-to-door retail cosmetics sales about 20 years ago. Mary Hudson built one of the major independent oil companies on the simple notion in the 1950's that discount energy would be needed in this country.

Seymour Cray of Cray Research in Minnesota founded his company with the vision of building the world's best computer. Cray builds about eleven computers a year, and they are generally conceded to be the best computer manufacturer in the nation. Storage Technology is run by a mad man in Colorado by the name of Jess Yaweda. The only thing in the world that Jess wants to do is buy IBM. He runs Storage Technology from a little town called Longmont with a population about a third the size of this conference attendance. Steven Spielberg and George Lucas have as much to say about education and computers and the state of American society as any of us in this room. What each of these winners has is a different set of perceptions.....a focus or a vision of the future.

What we did in researching for Megatrends was to look all across the country to see what is happening in our society. A number of people

like Gallup and Harris ask people what they think; what we do is similar except that we look at what people actually do. We do this by looking at the local sections of newspapers which tell us what people are doing and how they're spending their time.

There are two points you need to be comfortable with as these trends begin to emerge. The first is that change occurs locally. Contrary to what people in Washington, D. C. and New York City believe, they generally get the message last and tend to stay four to five years behind the rest of the country. What happens begins in Warrensville Heights and Dayton and Denver and Sacramento and all across the nation. The only place we have found where nothing has changed for about 20 years is Peoria, Illinois.

The second point is that what we do as a society --- how we behave --- is at least as important as what we say. And very often there are significant discrepancies between the two. For example, our society is fundamentally committed to the environment. But the data show that you have to gain access to water resources first and deal with the quality of the water second. We end up with a world in which the concern about water resources outweighs the concern about water quality by as much as five to one.

It is important to watch changes in the data over time. Had this session met in 1960, the prevailing perception in this room would have been that we lived in a rehabilitative world, one in which it was possible to fix almost anything. If someone broke the law in 1960, we tried to punish him and then bring him back into society. We would "fix" him. But the world of 1983 is totally different, having slowly changed from rehabilitation to punishment. Today we find mandatory sentencing, the return of the death penalty and adolescents being treated as adults.

Today, as a society, we're stressing principles of accountability and fair exchange. It shows up in the prison system, one of the fastest growing industries in the United States. It's apparent as discount stores

gain ground at the expense of the department stores. Minimum competency tests for high school graduates are part of it, too. We're increasingly concerned about costs. The big question being asked today of American schools is what they are doing with all the money they're spending.

It also is important to observe changes in the data in different regions of the country. The basic issues vary greatly from region to region. In the area of government, for instance, the basic issue in California is figuring out what government ought to do. That's why in California the state invests in private sector research and development. If you talk about government in the midwest, however, the basic issue is not knowing what government ought to do, but simply figuring out how to pay for it. In housing, California is a world of options and multiple housing styles: condominiums, duplexes and a new arrangement that started there, the notion of "mingle"..two people socially, legally or emotionally unrelated to each other are simply buying a house together. When you talk about housing in the midwestern part of the United States, the questions invariably come down to how a family can buy a single-family home.

There are dramatic differences across the nation which show up in trends and show the kinds of new things that are developing in various parts of the country. A basic question underlying a number of the trends is whether we will change the basic dimensions of our society. The agricultural system of the early 1700's and into the 1800's had a time frame that was the past. You were successful in that society to the extent that you could look backwards on what you planted, where you planted, when you harvested and to whom you sold. That's how decisions were made in that society.

Then came the industrial society which changed the time frame to the present. That's the world of: make it today, do it today, ship it now, bill it now, get it done...and it's almost always today, this week, this month.

From there, we move to a world in which the dominant time frame is the future. It's the ability to see ahead that starts to shape how

successful, unsuccessful or possible are some of the things we would like to do.

The strategic resource in agriculture was land. If you had land you could make it productive, and you were likely to be successful in that society. Capital became the strategic resource in the industrial society. That is why banks were the central mechanism of our society in the 1940's, 50's and even into the 1960's. But the fundamental or strategic resource today is information. In terms of what has made the society function, the transforming resource in agriculture was the natural energy of the men, women and animals who worked on the land and made it productive. In an industrial era that resource became processed energy, the generators, turbines and so on. And now, we're in a world in which the basic transforming resource is intelligence.

There is still another difference: in the agricultural society people traded for things that they needed. In the industrial society we have banks, and some people use green folding money. Now we've moved into a world in which we are all using plastic. We have made the transition from a society that had no banks to a society where everybody is or has a banker. That is why even Sears can go into banking.

In the health field, we began with a world in which doctors made house calls. (Nobody in this room is old enough to remember it, but doctors used to go see their patients!) We then created a top-down health system, centralized in the American hospital. And now we are taking apart the American hospital with the Wellness Movement and the variations of services that are health maintenance organizations, clinics, urgent care centers, and so on.

In the agricultural society, teachers used to go to the homes of children they taught. They moved from community to community and lived with students' parents. Then we built the top-down American school system, a model of the industrial system of the country. And today what we have is a series of options in which there are 48 million people in the United States involved in some kind of learning activities totally outside the university and public school systems.

What we are left with is a contrast between the fundamental needs of society and the operation of the country as a whole. Schools are rooted in a calendar that applies directly to the agricultural society. The schools open each Fall right after harvest, and close each year just before Spring planting. But agriculture directly involves only three percent of the American population today with about another 3.2 percent in farm-support activities.

The cultural roles, traditions and structure of American schools are tied directly to the industrial system. Every course is 46 minutes long, whether it is Shakespeare, computers or anything else. The school operates in the same shift idea that industry does. It focuses on logical left-brain learning, the primary ingredient of an industrial society, but secondary to an information society. And so we have an American school system that is totally out of step with what is going on in the society about us. Our society and its schools are focused on entirely different sets of issues.

These trends start to place significant questions on the agenda that schools must begin to address. The first and probably most important trend is the shift from an industrial to an information society. What is important to understand is that the shift is not coming — it is fundamentally over.....in the 1950's, over two-thirds of us made things for a living. Chairs, tables, podiums, overheads---whatever it was, two-thirds of the American populacion made a product to earn a living.

But today is a very different story. "Made in Japan" in the 1950's meant it was a shoddy product. You knew it was no good if it was made in Japan. But in the 1980's, we cannot compete with the Japanese in any market in any place on the globe, and we are consistently beaten by them in almost every economic sector. Fewer than 20 percent of us now are in manufacturing, and the number continues to decline. Over two-thirds of us are somewhere in the fields of information and service. Two-thirds of the gross national product has nothing to do with products or goods at all...it has to do with some kind of service or information job.

The single most useless piece of information on the American economy today is the Dow Jones Industrial Average. The Dow is of overwhelming significance to those of you in the room who care about 1950. If you care about the 1950's, the Dow will tell you just how 1950 is doing. In real dollars, the Dow has only declined 60 percent over the last decade. In real terms, the Dow is at 400 today, not 1200. The Dow measures corporations like International Harvester, which is fundamentally a bankrupt corporation existing by the grace of its creditors and debtors. The Woolworth Corporation, which fired 25,000 people and shut 350 stores....and Ford Motor Company, which lost a billion dollars in 1981, and another billion in 1982. The Dow is measuring the great corporations of the past rather than measuring the growth that is occurring today.

The over-the-counter stock market went up 300 percent between 1975 and 1980, and another 50 percent in 1981. Those are the companies in the engineering fields, the bio-technical fields, computer fields and service companies. We used to look at freight car loadings which were essential in an industrial society. But you don't move intelligence and information in freight cars; you use computers, meetings, seminars, discussions.

Steel is another example...primary in the industrial society, secondary in the information society. Auto production in the United States has gone from 1113 million in 1973 to 5.9 million in 1983. We simply are not going to be producing cars in this country by the end of the decade. General Motors will be the only American manufacturer of cars. Ford and Chrysler will either become global distribution companies, concentrating on other parts of the businesses, or they simply won't be there. Those of you who recently bought a Chrysler should get another one in the next two to three months, because when you need the parts, Chrysler is not going to be there. They will not last to the end of the decade.

Kilowatt hours measure the drive of the industrial society, but they are secondary in the information society. In terms of kilowatt

hours, the average information or service worker uses about one percent of the energy used by an industrial worker. The energy curve is flat and will continue to stay flat through the 1980's and beyond.

What has changed in the economy is where the jobs come from. Most communities in the U.S. lose about eight percent of their jobs on an annual basis. David Birch describes it as a bathtub with a slow drain, in which eight percent of the jobs are always going out the bottom but new jobs are always being added on the top. That describes communities which are healthy. Declining communities lose about the same number of jobs, but are unable to make them up because those new jobs come from totally different places.

The number of new businesses and entrepreneurs that begin those businesses explodes when economies change. We used to start businesses at the rate of 90,000 per year in 1950. In 1981 and 1982, we were starting them at the rate of 600,000 a year.

Another thing that has changed about the economy is that when capital was the strategic resource, women and minorities simply were not part of the economic system. Now that intelligence has become the dominant resource in business ideas and creativity, more and more businesses are being started by women and minorities who who account for more than a third of all new business in the United States.

What the new businesses look like and what they do have changed dramatically. Two thirds of the new jobs come from corporations that have fewer than 20 employeees. Over 80 percent of the jobs come from companies that are less than four years old. Older companies account for five percent.

This transition suggests a few things in terms of schools. First, average people in the information society are going to have five or six jobs during the course of their careers. Our past perceptions of training for a job in high school or college and going into a career or profession to stay during the rest of our lives gives way totally to a world in which

for reasons of both geography and interest, people will have more and different kinds of jobs in different parts of the country. That suggests the need for a different kind of learning.

Secondly, in terms of culture, structure and traditions, schools are acting as if they were preparing children for that industrial economy: that large-group instruction, the rote learning that matches the assembly line, the set of traditions and cultures that focuses on logical left-brain learning ....when, in fact, the world is focused on younger, more creative companies, applications of information and services, and smaller and smaller types of units. We are going to see even more changes... and the question is whether the schools are going to respond.

Another shift that becomes increasingly evident is the shift from a centralized to a decentralized society. We centralized to run the industrial systems, to negotiate among competing interests of management, operations, financing, scheduling, and in the public sector, to get through two world wars and a depression. You can't run World War II with the Florida State Militia attacking Mexico City, New York going after Toronto, and California either deciding to take over Alaska or to lay back and be mellow about the whole thing.

So, we centralized....and now we are returning that power more and more to local areas. In some respects, Ronald Reagan has moved the economy in exactly the direction we want it to go. He deregulated transportation, communications and the consumer/financial services in the market place. He has returned power to more and more local levels. In the next four to five years, we will continue in the direction of deregulation in two complex areas: health and energy.

In energy, we used to build large projects like the Hoover Dam and the National Bridge System. In the last 36 months, we have said that if it's big, we don't want it. In that 36 month period, we have scaled back the MX missile system, the largest public works project in the history of the human world. We shut down the Colony Shale Oil

project in the small town of Parachute, Colorado; that little community would have used 60 percent of the cement produced in the United States for the next decade....and it was about half to a third the size of the MX missile system. We shut down the peripheral canal in California, delayed the transmission line in the upper midwest, stopped the Trans-Canada pipeline.

What we are saying about energy as a society is that we'll deal with alternatives and smaller scale systems. We're now in a world of alternative energies, conservation and more local controls over energy. The most bizarre energy source we've seen so far is a greenhouse in Oregon. The operator maintains that the temperature of his greenhouse comes from 400 rabbits that he turns loose to run around inside the place. The heat comes from the ears of the rabbits. That little experiment saved him $100,000 a year, and cost the local service company the same amount in lost revenue.

The great institutions of the centralized society all are in decline. The American Medical Association now has a membership of only 50 percent of the doctors in this country, and it is losing power with its regional and professional affiliates. The political parties exist in name only. There are at least 495 in the U.S. Congress, and another several hundred throughout the country. Two candidates in Colorado ran in last November's election for the U.S. Congress without ever identifying their political party on radio or television.

Labor unions are the best example of the decline of centralized mechanisms. When an institution realizes that it serves no real value and has nothing to contribute to society, it reacts by looking around for something as big and useless as itself with which to merge. And that is exactly what the unions have been doing. It's a little like dinosaurs mating, waiting for the weather to change; but the weather isn't going to change. In the case of the unions, membership has gone from 32 to 19 percent of the population. In the western states where there is not the industrial base that many eastern states have, that percentage is dramatically lower, between 10 and 14 percent.

What happened to the unions? Doug Frazier negotiated to bring the UAW back into the AFL-CIO. Thirty days later, it was announced that all the locals could negotiate independently with the auto manufacturers. What Frazier had basically said was: we'll merge at the top, but the central function will now be performed locally. The same thing happened in the private sector last summer with Martin-Marietta, Bendix, Allied and United chasing each other. It became the lawyers and accountants relief act of 1982! That merger did nothing for anybody except lawyers and accountants!

In the world of computers, we have gone from the large 360s and 700s to the Apples, the Sinclairs and the other smaller and smaller systems.

Perhaps the most dramatic example of decentralized power at the present time is the Nuclear Freeze Movement. Can any of you in this room name the national leader of the movement in the United States? It is called the Nuclear Freeze Movement in this country; it's called the Ecology Movement in France, and it put Mitterrand in power. The Green Party in Germany, part of the same movement, helps the balance of power between the two major parties there. The nuclear freeze issue was on the ballot in only 26 states in this country, but more people voted in favor of the freeze than voted to put Ronald Reagan in office.. and if you remember, he ran in all 50 states! It is a phenomenal movement across the country with individuals, families and communities focusing on a set of issues they consider to be important.

While all of this is going on, the American public school system still runs as though it were a centralized mechanism. The standardization of curriculum and textbooks in so many schools across the country represents a homogeneity that does not correspond to the needs, variations or concerns of individual communities. The variations community by community, child by child, building by building, are much wider than the variations in curriculum. Most of the schools still tend to be run around superintendent and school boards which are centralized mechanisms.

But we are going to have to move toward variations within individual buildings.....and focus on quality.

A national economy no longer makes any sense. We used to have one in this country. When we were told there was seven percent unemployment, that meant in most places in the nation, the unemployment was seven percent. But today, we have an economy in which unemployment in Wyoming is 6.8 percent; it's 7.4 percent in Texas; 18 percent in Michigan; 40 percent in the city of Detroit; and 50 percent in the iron range of northern Minnesota. By industry, unemployment in health is about two percent. In the public sector there is about five percent unemployment; 25 percent in the automotive business; 33 percent in textiles.

We simply do not have a national economy. What we have instead are competing regional and global economies that are very different in terms of how they operate. California, Texas and Florida are leading the nation in that new economy. All are connected to global systems, all are focusing on information services and moderately high technology jobs. The clearest example is the upsurge described in housing in the last three weeks. Federal officials tell us that housing is on the move. They totally missed the point that over 50 percent of the houses started in the last quarter were built in the state of Texas. The correct statement about housing in the United States is that housing in the state of Texas is on a dramatic upswing, while housing everywhere else is still stable or declining.

We now have a growing global economy. We live in a world in which inflation cannot be solved in the United States alone. In the 1950's, most of the currency in circulation on the globe was the American dollar. Today that has changed to around 23 percent, and the currencies of other nations dominate the world economy. To solve inflation will require a set of decision made in Hong Kong, Taiwan, Berlin, Paris, Rome and a number of other cities around the world, as well as in Washington, D. C. Energy prices throughout the decade of the 1970's were set by Middle

Eastern countries. When the Bank of Mexico failed last summer, farmers in Nebraska, Iowa and the Dakotas got hurt. Real estate prices in the western U.S. are a function of the Canadian banking system. The Canadians have six national banks and can aggregate large amounts of capital. They did that, came south, and bid up commercial land prices in the western United States. Then the market got soft, they went home and we are left with the problem.

We live in a world in which the United States can successfully compete in only one area. There is only one thing we do better than any other nation in the world: building and selling the weapons of death. Our contribution to the global economy is increasingly the ability to sell the guns, the tanks and the other machinery of destruction to other nations of the world. We need to take a look at the children and re-assess our values. Do we really want war machinery to be our primary contribution to the world they live in?

We should be looking at Canada, Japan and Mexico, our three largest trading partners. Mexico, a nation of 77 million people, is the country on which to focus. It is about 40 percent the size of the United States, and the median age is 15 years old. We will have the first Spanish-speaking president of the United States in the not-too-distant future, and most likely that person will be elected within the lifetime of most of us within this room. Whether it is Mayor Henry Cisnernos of San Antonio, or someone else, that will clearly happen within the next 20 to 25 years.

And yet the school systems in this country do not focus on languages, cultures, or a broader understanding of the world around us... a world that we will have to live in. Increasingly, the instruction of foreign languages, foreign cultures, and the humanities.....subjects that give children and adults an increasingly important understanding of how that global economy operates and how other people view the world... are being pulled out of schools and being taken over by the private sector. We must raise the coming generations to understand their place in the world and to able successfully to contribute and to compete in this growing global economy.

Related to this same phenomenon is the shift in this country from the north and east to the south and west. For the first time in 1980, the number of people west of the Mississippi was greater than the number of people east of the Mississippi. Such a shift suggests two things in terms of education planning. One, because of the phenomenon of decentralization, more and more growth will occur outside the major urban centers. In the next decade, you will see growth in some suburban areas and significant growth in the rural areas, but not in the major American cities. Over 80 percent of Americans surveyed indicated that they preferred not to live in a big American city. Over the next decade, rural populations will grow 18 to 25 percent, and suburban populations by slightly less. The cities that will grow will be those in the west: Log Angeles, slightly; Denver, significantly; Tucson, Albuquerque, Sante Fe, Phoenix, and a number of others. The major American cities of the north and east will remain stable or continue to lose population.

What that suggests locally is that the growth in Ohio will be away from the urban centers and increase in the rural and suburban areas of the state. It suggests that any planning that goes on must focus on a stable or declining population in large cities, rather than on the expanding population which Cleveland saw during the 1950's and 1960's.

A shift mentioned earlier needs to be emphasized. This is the shift from business-as-usual to greater accountability and fair exchange. In retail, the discounters are beating the department stores, and middle men who don't add value to the system are disappearing. When Calvin Klein sells his blue jeans directly over the television every night, we make a decision about whether we want to buy them at a discount store or a department store.

In education, this is showing up in terms of accountability for both students and teachers. In some places in the country, school boards are being held accountable for their policies and procedures.

Anyone in education who thinks that things have been difficult in

the last few years needs to realize something: the pressure you have faced over the last several years is mild compared to the pressures you will face in the future!

The consumer movements are much stronger in the western part of the United States than in the east, and that movement will continue creating more pressure in the future, not less. Further, if you are an educator and you find yourself uncomfortable with the questions that are being asked or the standards of accountability and fair exchange that are being applied, now is the time to get out of the profession.

It clearly is going to be much tougher, so if you're uncomfortable or disagree with this movement, now is the time simply to get out of the profession since it is going to get much tougher in the future than it has been in the past.

Another change we are undergoing is the shift from an either/or society to a multiple option society. This is hard for all of us at this conference because we were raised in that either/or world. We were either in school or out of school; high school or working; college or working; married or not married; employed or unemployed; retired or working ----everything came down to those either/or choices.

But today's world is much different. If you remember, television was going to be the demise of radio. But the number of radio stations has gone from 600 to 3000, and the number of television stations has gone from three to over 100 with the cable systems. We now have channels that are all-news channels, public access channels, all-sports channels, all-religious channels, country rock channels...channels for almost everything. There are two channels for children's television.... Nickelodeon and Sesame Street.....and a channel for the U.S. Congress (that really is the third children's channel).

In magazines, we used to have Life, Look and Saturday Evening Post. Now we have over 4000 magazine, and probably everyone in this room reads at least three to five magazines a month. You read Time, Newsweek, or something like it about the national picture, and then you start reading

your professional journals, leisure journals, Cleveland Magazine, the business magazines, Ohio business magazines, hobby and activity magazines.

Banks used to be banks. We knew what they were because they had names like "Old 1st," "Ameritrust" and "First United." The largest bank in the world today is still Citicorp, basically a bankrupt corporation. If the world ends tonight, those folks have had it. The second largest bank is the Bank of America, third is Chase and then you're off into a world of such friendly old banking names as Shearson American Express, Prudential-Bache and Houshold. The largest casher of checks today in the U.S. is that old-fashioned, well-known financial institution, the Safeway Corporation. Safeways cashes more checks on a daily basis than the Bank of America and Citicorp combined, and 25 percent more checks than clear the Chicago Federal Reserve District for consumer and business transactions on a daily basis. The folks at Safeway are not at all slow!

Telephones all used to be black with dials, but now we have an explosion of instruments, colors and services...and with deregulation we will get more and more companies. We used to mail a letter by giving it to the post office. Now we can use Federal Express, Purolator, even the poor old post office gives us more choices. Of course, they still have the service they don't advertise: give it to us, and take your chances it may never make it.

Art used to be a reflection of the human experience, and there were major schools that we could name because there was general agreement on the human experience. If art is a mirror of the human experience, there are no longer major schools; there are thousands and thousands of mirrors, and different variations of what individual artists see in terms of the human experience and what it means. Similarly, in music, we used to have small chamber groups playing for audiences of 15 or 20 people. Then we industrialized music. We got large orchestras and large audiences; we got a boss and made him the conductor; we got a shop steward and made that person first violinist. Now we have hard rock, heavy rock, reggae, and 1001 variations being introduced in the classical field.

In social relations, we became convinced by the end of the 1970's that the only group of people who really would like to get married were Catholic priests. All the rest of us were going somewhere else with somebody else.

Education, too, has experienced change. The public schools now draw their enrollment from just 26 percent of the population. Only a quarter of our citizens have children in public schools. The first issue that emerges is whether public education will continue to be a public job. At the same time, there are 42 million people in non-public learning systems. There really is a McDonald's University and it really does have golden arches. Color Corporation runs basic education courses for 2000 employees on a continuing basis. The American Banking Institute is the second largest educational organization in the United States today; it runs training programs for 250,000 people on an annual basis. The Pentagon is the only system that is larger. Almost every large city has a free university, and in a number of cases, they are larger than other universities. The Denver free university has an annual enrollment of 30,000; the University of Colorado has an enrollment of 20,000.

While all these changes have occurred, the public schools have continued to operate from 8:00 to 5:00, five days a week. All the teachers have to be certified and work full-time in spite of the fact that more and more people would like part-time arrangements for increased flexibility.

One of the first things the schools must define is who they are going to serve. In terms of choices, the schools have restricted their activities to people who are between the ages of five and 18. Clearly, there is a much larger set of needs in many communities, particularly towns like Cleveland and smaller suburban and rural areas across Ohio.

Another important shift is from the hierarchy to the network. Basically, this means a shift from the dominant notion of physics to

the dominant notions of biology. Hierarchies are top-down, linear, energy-intensive, closed systems. Networks, by contrast, are omni-directional, interactive, informational-intensive, open systems, and they are becoming more and more common in all areas of the country. We're about 60 days from being able to use bank cards in automatic teller machines in almost every state in the nation. Libraries across the country increasingly are organizing themselves into networks to share information resources; hospitals are entering into cooperatives.

In the private sector, General Electric Corporation in running a biologically-based network: the board of directors sees its only business as starting new business. It isn't an appliance company, not a generator company, not an anything company. The board says it will move there there are opportunities to move, knowing the resources and the people. The Guten Corporation that made batteries in the 1960's was a chemical company in the 1970's and a high technology company in the 1980's.

What could be important about a network in terms of public schools relates to the questions that need to be asked and how to begin to answer them. Questions we used to ask in the centralized society of the 1960's were about how to change American education in general. Today, the questions are "How can I change my school district?" and "What can I do next week that is better than what I did last week?"

The same thing happens in terms of a network. In the stable world of the 1950's, the schools focused on what they should be doing for business or for the family. In the network, the question becomes, "What can schools and businesses do together to try to achieve some needed goals?" In every case of sound economic development in the United States over the last five years, it has been that partnership in a network that has produced quality of life and a stable economy. It shows up in the Research Triangle in North Carolina where economic development in the state is driven by the university. It shows up in Route 128 in Boston and in the Silicon Valley in California. Now the people in Texas have decided that, if research scientists can build on 150 or 200 acres in North Carolina, the clear Texas solution is to do

the same thing on 10,000 acres! We may soon see a reaearch triangle in Texas that would go between the cities of San Antonio, Austin and Dallas-Ft. Worth.

Networks could help schools address the bickering and childishness that goes on getween various segments of vocational education, industrial arts, home economics....the endless, meaningless battles about which ought to get which monies from Washington...which is more important... which one provides more valid life experiences....the battles between administrators, the school boards and the rest simply have to stop. What needs to be developed in place of all that is a growing sense of the relationship of the elected public officials and the business community to the schools.....that is the network which will become increasingly important over the next several years.

Finally, there is the shift from dominant technology to a world we describe as "high tech - high touch." This is a world that George Lucas and Stephen Spielberg really understand. In E.T, what Spielberg did was turn the whole movie on that one moment when the eight-year old looks at E.T. and says, "I love you." Obviously, Spielberg thought some of us in Colorado were slow, so to be sure we got the point and understood everything would come out all right, he put the rainbow at the end.

In Star Wars, George Lucas is working out the oldest possible questions of society, the Hobbs vs. Locke debate about man's basic nature. Do the institutions that run a society have to be predicated on man's dark and evil side, or on the goodness of the basic human character? Do we have to live in the world of the Empire, or can Luke Skywalker, the princess and all their friends, run a society that we can be happy with? At the individual level, it is the same question about basic human nature. Is Luke Skywalker an independent, strong, noble and good person, or is he Darth Vader's son, unable to control the evil, base nature in the human experience? All they did in those movies was to take the oldest, move sensitive questions and put them into a scientific high tech world....the world of rocketships, skin grafts, laser beams. They couple those things -- high technology and basic human values -- and we respond to it.

High technology shows up in every area of society. We introduced the technology of the CB radio, and we use it for chit-chat: where are the restaurants, where are the dates, where are the Smokies? We introduced the cat-scanners into hospitals of this country, and we gained the ability to control or extend life. Now we are moving to the hospice movement, and we end up with a family making the basic decisions about pride, dignity, love, suffering, affection and longevity.

Take the birth process. It used to be an abstract surgical procedure on the body of a woman, and it wasn't discussed much in public. Now, we have Lamaze classes, birthing center, the family room and the rest. We focus on what is clearly the most important part of the human experience.

We have television --- a technology that separates us ---and our friends in California turn right around and give us EST, the human potential movement...and all the other varieties of personal interaction strategies to try and maintain our relationship with one another.

We get airplanes that clearly lead only to more meetings. That is the only purpose of airplanes, I'm convinced. Robotics lead to quality of work and life circles, quality of control circles, and this all shows up in the world of computers.

We began by rejecting computers in the 1960's. When we were told they could be more efficient and better, that all of us would save lots of money and that secretaries would type faster, we rejected it all. We accepted the computer when our kids taught us the games. It was the games and the personal size that sold us on the computer, and that is the reason the Atari ads on television show you the family, the kids, the babysitter and the neighbors all playing together. What is says is: you don't have to be afraid of technology....in fact, it will bring people back together rather than separate them.

To understand the computer, consider the telephone. How many of you have had a meaningful discussion in the last few days about how your telephone works? Did anyone negotiate for a telephone when you took your

present job? You walked into the office and said, "I will not do this unless I get a telephone?" Anybody have to face that when being hired? The telephone was here when we got here, and as far as we are concerned, there have always been telephones. Imagine yourself in 1889 in southern New Jersey with Alex Bell. He is there tinkering with his little cans and wires, and he looks up and says, "You know, we are going to have brown poles all across this country, and we are going to wire every single house." We would have told Alex that he ought to be in a safe place for his own well-being, and moved on.

But kids have exactly the same reaction to the computer that we all had to the telephone. As far as they are concerned, computers were here when they got here, and they are totally comfortable with them... while the rest of us try to figure them out. The generation now going through the schools understands that computers are simply tools to be used. The schools are going to have to catch-up along with businesses and other institutions.

What all this starts to suggest are two things in terms of the ways we organize. The systems that used to work were dominated by the notions of physics and based on the industrial concept. They were defined by their structure; they were rigid, independent and free-standing. Their parts were perceived to be independent. You could deal with marketing or with production separately from everything else. We still do that in education: we deal with the elementary schools, the junior high schools and the senior high schools as if there were no connections among them at all.

But now we are discovering that institutions and mechanisms that survive are the systems based on notions of biology. Those are the systems that change and adapt in response to threats and to opportunities in the external environment. The systems are fluid, dynamically stable and interactive with the environment. They are self-organizing, and the people inside of them begin to shape how they work and what they do. They are constantly changing and the interaction is sometimes intuitive.

You do not see things coming, but you begin to respond to them. In the industrial society, managers ran the system run on rules, procedures and power. Hierarchy dominated and there was a belief you could simulate the future. You can almost measure the health of an organization as inversely related to the thickness of its procedure manual. The more paper you have, particularly in schools, the unhealthier the system is, because that paper makes it more difficult to change the system....to have the flexible operations that respond to needs.

Healthier systems see their responsibilities as including the need to exercise responsibility, influence and expertise. A manager is not trying to give orders, but is trying to add, to enrich the system and the people with one works. These people focus on the goals and the climate of what the business or institution ought to be, not the daily machinery of how all of the work gets done. The emphasis is on getting the right information to the right place at the right time. The managers also believe that everybody has something to add -- regardless of their position in the organization -- that will make it a better, more productive system. The future is not simulated, but rather is a set of constantly shifting patterns becuase what goes on around us is constantly shifting. The planning process is not formalized, rather you keep looking at the future and making decisions that keep adjusting to it.

That brings us to the challenge of the 1980's for education. There is a great difference between running a school as a business and trying to serve a community's needs. If you are trying to run a business, you focus upon the population between five and 18, you hold school from 9:00 to 5:00, and then everybody goes home. If you are trying to serve a community, you probably are in the day-care business and in the adult-learning business. You may be working with small businessmen and women to help them learn about computers. You probably have volunteers and other part-time people in the schools. Your behaviors change entirely, depending on the business you decide to operate. If you are a superintendent who thinks his responsibility is to run a school district, you behave quite differently than if you believe you job is to enrich the community

and to free up the energy and skills of the teachers. In the first case, running that system means you have to follow the rules, manuals and procedures. In the second system, you are looking for people with something special to contribute, and you are trying to help them do what they do best. These are different visions resulting in totally different behaviors.

The importance of vision shows up in all kinds of institutions. Chrysler gets excited when they find three percent of the market in convertibles and begins to talk about great recoveries on the basis of that little finding. On the other hand, the board of directors of Coca-Cola decided that Coke has no nutritional value. They said that Coke is an entertainment produce...and since that is the type of business they are in, why not buy a film company.....it makes absolutely perfect sense . The Harvard MBA's and Wall Streeters went nuts because their did not understand it. To Coke, it was very simple.

The public schools need such strategic vision. They must learn not to be afraid of uncertainties...and they must learn to adapt to the communities they serve. We live in a different society than we had 20 years ago. Now the schools must catch up to....and respond to... today's changing world.

INVENTIVE REASONING: PROCESSING KNOWLEDGE INTO UNDERSTANDING AND CREATIVITY

May 5, 1983

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INVENTIVE REASONING: PROCESSING KNOWLEDGE INTO UNDERSTANDING AND CREATIVITY

by

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New students are a delight at the beginning of the school year. At a good university, the students have gone through a tough selection process. They are the students who have performed well in previous schooling and who have good self images. They enter the university eager to solve the important problems of the world. To me, they are like shiny new pennies. The thought of them makes me smile.

Unfortunately, after the first few weeks, the shines disappear from most of them and their main concern becomes survival. This loss of excitement is distressing to those teachers who enjoy having enthusiastic students in their classes.

Even more distressing is the inability of many students to discuss intelligently the subject matter of a course, even after passing the tests. Ruminating on the possible causes of these unwanted results of schooling led me to some thoughts which have completely changed my teaching. Perhaps they will be applicable and helpful in other areas of education.

Most people agree that one aim of education is to produce knowledgeable students, aware of all the facts and techniques in their areas of study.

Those of us who teach courses loaded with content (and also the students who take our courses) are frequently overwhelmed by the amount of material which must somehow be crammed into a semester. There is such a large body of knowledge the student must command to be a competent professional person. We are so busy organizing the material concisely and "moving ahead" that we sometimes forget our real goal: the training

of minds.

One of the most efficient methods of transferring all the facts and information to the student is by tightly organized lectures. However, as one of my former professors said, "Learning is a method by which the notes of the instructor are transformed into the notes of the student without passing through the mind of either!" Most of us recognize, from personal experience, that listening to a lecture is usually a passive activity. In short, listening is not necessarily learning. The corrolary to this is that lecturing is not necessarily teaching.

In the lecture-homework situation, the student learns mainly to absorb and accept. His exposure is largely to what has been done in the past and he is mainly involved in learning to reproduce what has been done. It is as though he were being taught to trace Picasso line drawings. Surely, the training of minds involves more than this.

One of the unfortunate onsequences of this kind of education is that the student develops a certain surface facility with the subject but is unable to discuss it because little understanding has been developed. In addition, in subjects such as the sciences, engineering and mathematics where there are large numbers of problems which must be solved, the student learns that on homework and on tests, answers are of only two kinds: right and wrong. The really unfortunate message given implicitly by most teaching and testing situations is that problems have an answer. This is a disastrous mental orientation, making it essentially impossible to be creative.

I occasionally hear the complaint from my industrial colleagues that schools don't teach the fundamentals anymore. The key question for all of us in education is "What are the fundamentals which we should teach?" We agree that in the future our students will have to live with change -- more rapid change than we have been used to in the past. Then we should be equipping the students for survival in a rapidly changing society.

How do we teach this? We educators must decide. We cannot afford to wait for a solution from somewhere else. We must begin immediately to teach daily in the classroom those modes of thinking which will not only give the students the ability to survive change, but to anticipate it, and, when desirable, to cause it.

Typical reaction to the problems of rapid change and the explosive growth in information is to have more courses to teach more facts. Unless we are very careful, this will be just more of the same....when what is called for is a different orientation.

We must go beyond the teaching of facts and techniques, and focus on the thinking aspects of education. If we can give the students the ability and skills to think well, they will have the basic mental tools to work with any changes that may occur in their fields.

With this new focus, we will understand that the most important things going on in a classroom are going on in the minds of the students: the development of habits of thought, directions of inquiry, and attitudes toward problems that lead to formulating solutions. It is up to us to lead the way, to show them the power of being able to think, to give them the impression that this is important and exciting, and to provide them with sufficient guidelines and practice so they begin to feel, "I can do it!"

You have probably head the old two-liner:

Question: "What is physics?"

Answer: "Physics is what a physicist does."

The non sequitur answer which causes us to chuckle is actually a keen insight into the heart of any professional activity. The important part of physics is not what is written in the textbooks. Rather, it is the attitudes and mental skills which the physicist uses in working with the factual information of physics. The experienced professional person in any field has carefully developed the skills of finding and defining problems, extracting the assumptions surrounding the problem, proposing and examining a variety of approaches and possible solutions, and

establishing criteria and decision-making strategies for arriving at a course of action. These are reasoning skills. Only in rare instances do we teach them. Our students have learned to learn, but have not learned to reason. Learning is primarily absorbing by the mind; reasoning is producing with the mind. The difference is the difference between tracing Picasso drawings and producing an original. Whatever the field of education, whatever the level, the main goal should be training the student in the mental habits and attitudes of the best professionals in the field. This is true whether the field is physics, history, economics, car repair, philosophy or cooking.

Some new perspectives on education now emerge. Facts, techniques and theories must be learned because they are the raw materials with which one must think in any field. A professional could not operate without such knowledge any more than a sculptor could produce a marble statue without marble. But we must add two other important aims:

1) Development of reasoning skills with which to understand the underlying meanings of the factual material.
2) Development of inventive reasoning skills to generate new possibilities...to see "what might be".

These skills involve having the mind produce, rather than reproduce. If the student can develop these kinds of reasoning, not only will we have more productive minds, but the students will catch the excitement of generating thoughts instead of simply learning what others have thought. Vicarious thinking does little more for the mind than vicarious bread for the belly.

We must start by breaking the implicit assumption tht it is not possible to think until after the facts in a field are mastered. This usually means that the course is over before all the facts have been covered; the thinking stage is never reached. To move toward our aim, the student should begin to develop the attitude of the skillful professional <u>while</u> the facts are being mastered. We must continually show the students how to extract learning from what they are learning. Only

in this way will the students find the excitement of thinking with the facts before succumbing to the boredom of memorizing the facts.

If we are to teach toward the understanding of meaning, we must ask: "of what does understanding consist?" For any partial answer we would have to include:

1) Ability to see relationships within the information. The more complex the relationships discerned, the greater the understanding.
2) Knowledge of the assumptions underlying the information. The extent to which these have been identified and examined is another measure of understanding.
3) Perspective on the information and the relationships. This implies a knowledge of their sources and evolution, their relative importance and their relative soundness.
4) Ability to see implications and to uncover the heuristic significance of the information and concepts.

How do we gain this kind of understanding? First, our mental attention must shift from absorbing to examining. We must learn how to find meaning, relationships and ramifications. The major tool for this is the skill of questioning, of examining the facts against the background one has at the moment, whatever the stage of learning or age of the learner. When faced with information, we must continually ask:

- What are the assumptions being made? Major? Minor? Hidden? Flexible? Questionable?
- Why was the work done? Why in this context?
- Where does the fact or proposed solution fit well? Poorly?
- How is this related to other information? Are there inconsistencies? How can they be reconciled?
- What are some concrete examples? Points of support? Lack of support?
- What can we do now that we could not do before?
- Where could the new information lead? What are the next problems to which this leads?
- Are there alternative approaches to the problem? Other points of view? Other definitions?

This is reasoning! It is critical in politics, chemistry or city management. It can only be learned by practice, and the practice must be included in the courses, at all levels.

Questioning should be considered an overt skill with which meaning and understanding can be extracted from the "cold" facts. We owe it to the students to lead them into the habits of questioning and thinking which we use. In my technical courses, I have added sessions in this process of leading students toward reasoning, and have found that they are received with great enthusiasm by the students. A detailed discussion of the operation of these sessions is given in Reference 1.

In these sessions I do not lecture, since the focus is on giving the students practice in the operation of their minds. The teacher's attitude in these sessions is extremely important. We are at mental close-quarters in the room, and the students are just beginning to learn the subject matter. The slightest hint of a put-down of a student would be deadly. The groups could easily turn into torture sessions and the students would learn to hate the subject. I try to keep the atmosphere lively and friendly. I want the students to see my delight in the subject and in thinking about it. As Alfred North Whitehead wrote, "One of the teacher's functions is to elicit enthusiasm by resonance from his own personality."

The teaching method is one of leading by asking questions, not by telling. I engage the students in conversation about the point under discussion. When I find where the group is comfortable with its level of understanding, I begin to ask questions such as those mentioned previously, but leading by small steps in a direction where I know there is a lot to be understood. I try to set up puzzling questions, as if we were following Jacob Bronowski's observation that the "Scientists in laboratories only end their discussion with a mathematical equation. They begin their efforts by trying to solve conceptual riddles." Working through a puzzling question shows the students that if they can learn to

reason properly they have a path to new insights -- to seeing more than they saw before. Another advantage to this approach is that if the student has reasoned with the information, it is more likely to be retained.

We work hard to take the "magic" out of graphs, equations, techniques and theories. We continually ask "Why is that?" or "How come?" My hope is that this will become a basic attitude for the students.

When possible, we sketch what we are discussing. A detailed sketch or a detailed description can show where a concept is poorly understood and can force us to make explicit some of the assumptions being made. This is most important, because if an assumption is implicit, it cannot be understood or examined.

As the students discover, when they are asked a question, it does not make much difference what answer they give or what conclusion they draw. If the answer is "correct" my question will be "How come?" The important thing in learning the skill is not the answer, but the reasoning we can use to work toward an understanding of the answer.

In the case of physical phenomena, we frequently ask at the end of a reasoning session, "What does this permit us to do that we could not do before?" Or I will pose a problem for which a solution can now be seen where it was totally hidden before.

These are exciting classes for me because I can see the students gradually gaining the questioning attitude, and beginning to believe in the enormous amount of meaning which can be dug out of what seems like a dry problem or paragraph. The pace is fast and, as one student said in first year, "You sure can't sleep in this class!"

The students at our school fill out an unsigned evaluation form for each course, and make written comments as appropriate. Since the first

class in which I used the reasoning groups, not one student evaluation of the groups has been negative. Written comments have varied from generally positive to ecstatic. A number of students have written that this was the most enjoyable and stimulating technical course they have ever taken. Many have added "Thanks" to the evaluation. One students wrote a letter to me several years later to say that it was in these groups that he first learned to think. A student last year stated that, for the first time, he had begun to see the meaning of mathematical description. My favorite comment was made by a student to his advisor after the first few groups. He said they were "the greatest thing since peanut butter."

Our second new major goal is to help the students develop thinking skills which will permit them to see the new possibilities in the information they have learned to understand, and to be inventive and creative in the solution of problems. I define inventiveness simply as the ability to pose alternatives, where the alternatives can be solutions, problems, words, devices, etc. It is a general skill which can be extremely useful and powerful in all areas. I frequently indicate what I mean by inventiveness by paraphrasing an anecdote which I first saw in the Saturday Review of December 31, 1968. The story was told by Alexander Callandra, Professor of Physics at Washington University in St. Louis. It is about a student in a colleague's course who had given an unusual answer to the test question: "show how it is possible to determine the height of a tall building with aid of a barometer." The student had answered that he would tie a rope to the barometer, lower it over the side of the building until it touched the ground, then measure the length of the rope. This is, of course, an accurate method of measuring height, but hardly justification for a grade in a physics course. It was decided to give the student another chance at answering the question, but this time with an answer indicating some knowledge of physics. After five minutes, the student still had not written an answer, and, when questioned, indicated that he had many answers and was just thinking of the best one. He finally

dashed off an answer: he would drop the barometer from the top of the building, timing its fall. Then, from the formula $d = \frac{1}{2} gt^2$, he could calculate the height. It was agreed that this showed some knowledge of physics, so the student was given nearly full credit.

On the way out of the office, Professor Callandra asked the student about the other answers he had in mind. The student said that one simple way of measuring the building height would be to measure the height of the barometer, then measure -- on a sunny day -- the length of its shadow and the length of the building's shadow. The height can be calculated by simple proportion. Also, one could walk up the steps, marking the lengths of the barometer on the wall. At the top, the number of marks would be multiplied by the barometer height to give the building height.

A more sophisticated "physics" answer would be to tie the barometer to a length of string, swing it as a pendulum and calculate the value of "g" at ground level and at the top of the building. This would permit calculation, in principle, of the height of the building. However, the student said he thought the best answer would be to take the barometer to the superintendent of the building and say to him: "Mr. Superintendent, I have here a fine barometer. If you will tell me the height of this building, I will give you this barometer."

It is very important for students to develop thinking skill like that of the student in the story, because his thinking was not rigid. It is this kind of flexible thinking which leads to new solutions to problems and to new insights into problem areas. And yet, flexibility is not a word most of us associate with thinking.

There is another powerful advantage hidden in developing flexible thinking. The new thoughts must come from inside the person and are immediately recognized as belonging to that person. Hence, the thoughts are that person's own ideas. People are much more excited about having their own ideas and working on them than simply following what someone else has told them. Yet, nearly all the material the students have learned in schools was the product of someone else's mind. It is imperative that we show our students the excitement of having ideas. Once they have felt this

kind of excitement, motivation is no longer a problem.

A course and workshops have been developed around this concept. Some detailed discussion of the way the course is run appears in Reference 2. Teaching these invention skills is quite different from teaching facts. One certainly cannot learn to be inventive or to think with great flexibility by listening to lectures or watching video tapes. It can only be learned by the "bloody nose method" much as one learns to play tennis or the piano -- by doing it, with the guidance of someone who is fairly expert.

There are a number of attitudes and ideas which one discovers in such a course, and it may be helpful to mention a few here. The students rapidly find that it is fun to think flexibly because the thoughts and approaches to the problems are frequently new, surprising and occasionally funny. We also find that there are not "good" and "bad" ideas. All ideas teach us about the problem. The major function of ideas is to lead to other ideas, not to be judged and discarded. "Good" and "bad" only have meaning after the problem has been narrowed.

In thinking flexibly, the students often find that their creativity is hindered by a lack of factual knowledge. They come face to face with the need for factual knowledge, and it no longer appears to be so dull. The students need to know that it is acceptable to think this way, because most of their previous school experience has consisted of learning specific information which could be judged right or wrong.

It is imperative that students feel that it is <u>possible</u> to solve a problem. This is not the usual attitude of a student when faced with the task of designing something new and better. The feeling comes only to those who have had considerable success at solving new and unsolved problems. With enough experience in class, with a variety of problems, students can begin to develop this confident point of view.

We rapidly find that the ability to suggest new approaches to problems and have "different" ideas is not tied directly to academic grades because

it is a different skill from that used to absorb information and pass tests. Hence, the invention sessions give different students a chance to contribute to the class.

There are some general goals in learning to reason inventively. One is to decrease the randomness in idea generation. This involves knowing where one is in the problem, as if one had a map. In fact, we should work toward being inclusive in idea generation -- covering all the major kinds of ideas anyone would have who thought about the problem. An added advantage to having this level of invention skills is that it is easy to get started in a problem, and there is much less stress about where the next idea is going to come from.

The main method which permits this is organization of the problem, using all the available information. In à sense, reasoning and knowledge act as guides toward imagination and creativity. To state this in terms of brain function, the left brain organizes the problem and points out sequential fields of activity for the right brain.

In class, we do large numbers of invention problems, using many approaches to the problems which help us to develop new ideas. We begin with simple open-ended problems which can vary from "What else can you do with a paper clip besides clip paper?" to "What uses can you find for a magnetic plastic?" This resembles brainstorming. However, we also do problems in problem definition and organization. The definition or image one has of a problem is a major limit on the types of solutions which will be found. If the definition of a problem is changed, different families of solutions become available. Therefore, we set up problem definitions explicitly and purposely change them in the course of doing the problem. We pay particular attention to the assumptions we are making while working on the problem. This is important because an implicit assumption cannot be controlled. If an assumption can be made explicit, it can be controlled and varied. We work hard at making assumptions explicit.

Another aim is to become sensitive to problems -- to try to suggest

what needs to be done and also how to do it. As Albert Szent-Georgi once wrote: "Discovery is seeing what everyone else has seen but thinking what nobody else has thought."

We also work with such techniques as:

- methods of eliminating the problem
- defining ideal solutions
- establishing families of solutions
- methods of problem organization
- methods of thinking by analogy
- practice in following trains of thought
- minimizing disadvantages
- improving on everything and anything

After conducting a number of courses and workshops on inventive reasoning and working with students to develop the skills to see meanings behind what they learn, a framework of a helpful problem-solving strategy has emerged. Each of the stages of this process has helped me, at one time or another, to solve a difficult problem. Exercises can be done to develop expertise in each of the stages.

1. Define the problem. They may require short-term definition and setting of a long-term direction for the solution.

2. Generalize the problem. This should be done to obtain a larger perspective on the problem and make available a wider range of solutions. Examples will be given later.

3. Set ideals. Describe the nature of a perfect solution. This will frequently set a direction for solving the problem. If more than one kind of solution can be conceived, so much the better.

4. Develop sets of solutions. This is where you can use all the skill you have in flexible thinking. Be as loose as you can because the more points of view you take, the more you will understand the problem, and the more likely you are to develop a new kind of solution.

5. Examine the obstacles and the assumptions implicit in the problem. Ask which assumptions and obstacles can be eased, which can be designed around, which are iron-bound, etc. Be as flexible in your consideration of the obstacles and assumptions as when you are "solving the problem."

6. Complete your solution by solving the problem of how to implement it. This is where many brilliant ideas are

> sabotaged. The implementation problem is often as tough as conceiving the new solution. Unless you solve this problem, all the previous thinking will have been an exercise in futility.

A few examples may illustrate some of these procedures. Consider the problem of getting a levy passed. One thinks of community meetings, door-to-door campaigns, informational letters,etc. In this case, the problem has been thought of as methods of contacting the community. The approach is much the same as that used for fund-raising campaigns such as United Way. But this is a narrow conception of the problem. If one generalizes the problem by asking what umbrellas it falls under, one sees that one of the bigger umbrellas is that of school-community relations. If these relations are sufficiently healthy, passing a levy will be much easier, and the levy will not generate the crisis atmosphere one usually finds.

In one method of organizing the problem, the focus would be on (1) the audiences in school-community relations, (2) the general activities which could be involved and (3) the school people who are engaged in establishing these relations with the community.

The audiences are not so readily identifiable as might be thought at first glance. They consist of more than school children and their parents who are only part of the community with which the school desires good relations. For example, there are the retired men and women and the career men and women in the community. How much attention do these people receive from school except at levy time? If they are to be long-term friends and supporters of the school, there has to be a serious continuing relationship. Hence, programs will have to be developed to involve these people with the schools on a long-term basis. The other end of the age spectrum must also be considered. By definition, pre-schoolers are not yet in school. However, what better public relations could there be than establishing good relations with the people who will be your future customers? Pre-schoolers and their parents must be part of the community relations effort.

In examining the activities, let us look at only a few generalities which may expand our perspective. Our activities involve primarily words and actions. Words, communication and information are more important than we might think. Even if we can plan activities which will involve the audience groups, they can only be involved occasionally. Communication with the audiences can hold their attention and let them know that we seriously care about them between the activities where we meet them face-to-face. There are a number of kinds of communications directed to various audiences which could be used to keep close contact with them.

Of course, words are not enough. Activities are even more important. Some schools do an excellent job of keeping parents involved. But the same kind of attention should go to the other groups. Kinds of involvement should receive a lot of inventive thinking. Open houses, though valuable, are limited in their appeal. Scheduling the use of the schools outside school hours has been arranged in a number of districts for the benefit of the citizens of the community.

The people involved from the school's point of view could also be expanded. Typically, we think of teachers in conferences and open houses. The best people to be involved are the students. Could groups of pupils be of some help to retired persons? Would they volunteer to occasionally cut lawns, rake leaves, etc., at a reduced fee for those who are infirm? In general, schools need to do things in and for the community, and keep the names of the schools in the minds of the citizens. This is very fertile ground.

The solution of this general problem of school-community relations would eliminate most of the crunch of passing levies.

As another example, consider the teaching of science to elementary school pupils. This is a situation where poor problem definition has caused great difficulty and has turned a large number of children against anything scientific. For most teachers, science is a body of detailed knowledge to which the students must be slowly introduced. They know it is concerned with

experiment and observation to show how the body of knowledge came about. Hence, for science, the class does a certain experiment, makes observations and everyone fills out the same worksheet with the information obtained. In most cases this procedure, if carried out a sufficient number of times, misses the essence of scientific thinking, and is guaranteed to convince the students that science is a dreadful bore.

What we should be trying to do is teach the scientific method (and it is not necessary to use those words). This has an important philosophical sound to it, but the scientific method is no more than "how scientists think." The goal is to be able to understand the phenomena being studied. When the phenomena are sufficiently well understood, predictions may be made about changes in the future behavior of the system.

First the scientist observes, as keenly and carefully as possible, and he may record these observations for future reference. He then asks questions about the observations and speculates about the behavior observed and the possible relationships between the observations. To test these hypotheses, he will then construct experiments to test the relationships he suspects exist or to fill in gaps in his knowledge. After these experiments and observations, he asks more questions, formulates more hypotheses concerning the system's behavior and constructs more experiments to test his understanding of the phenomena. There is continual interplay between experiment, observation, questioning and hypothesis, and there is real mental excitement in advancing the sequence. It is this mental ferment, this highly inventive part of science, that the students do not see, and which is the exhilarating part of science. If science were presented to the students at all ages with this activity foremost, there would be fewer bored students, and science would not have to suffer the adjective "dry" with which it is often labeled.

In both of the examples above, real insight into the activity was obtained when the focus was raised to a more general level. In my experience, this is true for many problems.

In my research in the laboratory, many of the techniques I have

discussed have led us to different approaches to problems. Examples are new methods of sustained release of drugs; sharpening the effective pore-size distribution in separation membranes; eliminating the build-up of proteins and cells during separation with membranes; gels for the removal of phosphorus from patients with kidney failure to prevent bone disease; new methods of grouping students for instruction; and a method for assessing growth of placental blood flow during pregnancy.

The real goal of focusing the attention in education on the development of flexible mental skills is to give each student the feeling that the real excitement in life is within his or her mind...if it is used this way. There is an old saying, "Give me a fish and I eat for a day; teach me to fish and I eat for a lifetime."

If students can become familiar with their minds, if they can discover that their minds are their most powerful tool and greatest source of excitement, if they can be led to find the joy of thinking deeply..... ...then they will have the greatest gift that can come from education: the motivation toward a reasoning life.

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THE SCHOOLS AND PLANNING FOR THE FUTURE: SOME BASIC CONSIDERATIONS ON THE PROCESS

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In the presentations today, school administrators, community leaders, and board members have been called to reconsider the schools' "reasons for being" as well as the mechanisms and processes to achieve its desired ends. Among the challenges advanced, school boards and school personnel have been urged to: expand academic requirements; increase effectiveness in teaching the basic skills; consider lengthening the school year; reaffirm a commitment to promote lifelong learning; assist students further in developing problem-finding and -solving skills; place new emphasis on the high-tech and high-touch skills essential to effective living in an information and service-oriented society; engage in long-range planning; decentralize decision-making; expand networking capabilities; and the list could go on. Along the way, we were reminded anew of the decade-long decline in SAT scores; of the increase in both functional illiteracy and the percentage of school dropouts; and of the declining abilities of teachers now entering the profession. We were further informed by implication that while we as educators are good and decent people who try hard, present efforts are insufficient; and dramatic changes are necessary if schools and school personnel are to obtain the type of respect from community which all desire.

The tone of today's presentations mirrors that of the much publicized Report of the National Commission on Excellence in Education. The tone can be described as "caringly and constructively critical." In a helping spirit, the presenters today have outlined several responses to the question, "What kinds of changes in thought and action are necessary to prepare youngsters to cope effectively in the future?" They chose not to address the question of "how" to bring about the recommended changes within existing school communities. These "how to" questions, I would contend, are the issues which have and do plague school officials most, and it is to these issues that I shall try to focus my remarks.

My immediate task is to prepare us for tomorrow's session, when, working in groups, we shall try to identify, however tentatively, "futures priorities" for our districts, as well as strategies and tactics for further identifying and then addressing those priorities. With respect to this task, I will attempt to identify a set of "school in society" and "school in school" considerations which warrant careful attention in our planning groups. Major emphasis will be placed on "how to" or process issues on the assumption that the primary problems encountered by school managers relative to futures planning are not those of conceptualizing appropriate ends, contrary to the thinking of many critics, but of identifying how to stimulate thinking on, ownership of, and support for well conceptualized ends among constituencies outside and within the school system.

Creating a Perspective.

For those who have studied schools over the past twenty-five years, several of the recommendations of today's presenters, as well as the recommendations of the National Commission on Excellence, have a familiar ring. In the early sixties, after Sputnik, many of the same recommendations were made. At that time, the need for an increased academic emphasis within school programs was well accepted by the general public as well as school professionals. National study projects were established, and project efforts were supported with federal dollars. From these deliberations came a call for renewed emphases on disciplinary study and further focus on the development/refinement of basic skills. The creation of the new mathematics, the new social studies, and inquiry-oriented science, as well as support for foreign language laboratories ensued. The revolution was "on." Follow-up efforts were carried out at all levels of the nation's school system. Programs were created by the "best and brightest" scholars; in-service was held universally with administrators and teachers to assure competence at the point of delivery; and new

program implementation was carried out with flourish and fanfare. At best, local citizen and staff involvement in program conceptualization was "spotty." In the main, program plans came from the national projects, and the plans were conceptually sound. The curriculum change effort was tried, (whether plans were implemented is debatable), on an enormous scale, and the more things changed, the more they remained the same....or got worse. Correlated with this well conceptualized and highly supported curricular change effort were declines in student enrollment in the sciences and foreign language study. In addition, mathematics achievement scores also proceeded to decline in a great many schools.

In essence, the national curricular revolution was blunted at the classroom door and local school districts received substantial criticism for their part in the effort. This same phenomena could again occur unless, as we examine this only moderately effective effort to bring about broad-scale change, we learn from our mistakes.

Some Mistaken Assumptions.

One basic problem marring efforts to bring about effective change in schools has been the mindset common among school constituents that schools are like any private enterprise organization. Schools, as institutions, are substantially different from most forms of private business in two important respects: (1) the constituencies of schools are multiple, concentrated with respect to location, more diverse, and more powerful in setting limits on what schools can do than are the constituencies of most private businesses; and (2) the history and culture of schools serve as unique and powerful impinging factors with respect to bringing about effective change. Unless and until each of these differences is understood, and until the commonly held, false assumptions associated with each are both understood and countered, new efforts to shape the future of schools will likely result in a fate equivalent to the post-Sputnik effort.

A Mistaken Assumption: Schools and Their Constituencies.

The architects of change for schools, including the presenters today, frequently operate on the premises that schools determine society, and that school staffs can make whatever changes they see fit if they understand the necessary changes from a substantive perspective and are willing to institute those changes. No premises are farther from the truth. If they were valid, desired program changes would become reality far more rapidly than most persons outside the school setting might imagine. The fact is, however, that schools reflect the society, and school personnel can only make the changes which their public constituencies will permit.

In this light, it is important to examine the characteristics of those constituencies as their characteristics must be taken appropriately into account as the change process is conceptualized at the local level. Three characteristics are particularly worthy of note:

1. School constituencies are notoriously means-oriented and are generally uncomfortable or bored with ends-oriented dialogue.

Successful politicians understand this phenomena. They know it is more productive to take a position of "no increase in taxes" than to engage the public in dialogue on the potential social consequences of maintaining in 1983 a 1950 tax level; they understand that it is more politic to talk about the evils of busing than to explore the meaning of living productively in a pluralistic, democratic society. The simple fact is that most citizens find the discussion of goals neither enticing nor productive and would prefer talking about means. The means, in turn, often become the ends of schooling. Complicating the matter further is that, in an operational sense, for many of the schools' constituents, and for some school staff members, a very limited set of means have become the sole unexamined ends for which schools exist, e.g., band, cheerleading, and football.

This narrowness in constituent perspective poses a pivotal problem to those endeavoring to provide leadership to local futures planning efforts. How do school boards and administrative staffs get their constituencies, including professional staffs,to think broadly about the future and the implications of that uncertain future for school purpose before proceeding extensively with the specifics of the futures planning process? The question is a tough one, but it must be addressed first and foremost. If only those here-present ask and address the futures content questions without constituent involvement, that constituency will likely associate our responses with us, own none of the commitments, and feel free to critique our efforts in a detached, unlovingly critical way. History will then have been repeated, only on a local as opposed to national scale.

The second and third characteristics of school constituencies are extensions of the first and argue further for intensive community participation early in the futures planning process.

2. School constituencies generally value the status quo apart from a perceived crisis.

Few adults are comfortable with change. School constituents are no different. In this light, boards of education and school administrators cannot effectively move to address any futures need without first creating a sense of perceived need among the constituency for action, particularly if that contemplated action will necessitate change in constituent behavior. The challenge is in some way to create a sense of urgency within community that constituents demand action. This challenge is not easy to honor, but it must be addressed.

3. School constituencies may agree readily with an idea when it is presented as a general construct and rebel totally against the idea when its full ramifications are felt.

E.F. — Few will disagree with such recommendations as increasing academic requirements or extending the school year when these ideas are presented in global sense. When the "new math" was initiated, no one objected; when program implementation left some

teachers and many parents feeling inadequate with their own mathematics abilities, problems quickly surfaced. The same may be true for most futures issues. It is hard to oppose increasing academic requirements, providing that my youngster completes the secondary program in four years; it is hard to find good reason to object to a longer school year, providing that my family's annual summer vacation is unaffected and there is no increase in property tax.

In essence, as local districts address desired futures issues, new problems will inevitably be generated. Efforts to address those problems will only be as effective as community support will permit. Therefore, constituent participation must be planned early in futures planning process, and that dialogue must be continued through implementation in order to assure constituent ownership and support. If constituent support is not developed from the very beginning of the planning process, chances are good that efforts to change will result in no change whatever.

Mistaken Assumptions: Schools and Their Staffs.

Given that school staffs are socialized through living within community, they reflect the characteristics of the larger constituent group. For this reason alone, faculty must be involved early in the planning process if the outcomes of the process are later to receive their support.

The single most powerful and false assumption of many abortive school change efforts has been the belief that effective program change can take place without substantial support of faculty. It is similarly false to assume that effective planning on the school level can take place by simply involving faculty in the planning process. Making meaning of this last mistaken assumption requires careful examination of several findings relative to the change process in the school culture.

Within the school culture are several well established and identifiable tendencies which make difficult the effective involvement of staff in planning processes.

These tendencies need to be understook as we proceed with futures planning in our local districts, and as appropriate, they need to be countered.

1. The socialization of staffs commonly leads many teachers to adopt an other-oriented as opposed to self-directed perspective on living in the school organization. Staff frequently perceive themselves as being "done to" by those higher in the hierarchy. Staff development, for example, is commonly defined by teachers as what the system "does to me" as opposed to what I "do for myself." As a corollary, school outsiders are commonly viewed by school staff members as uncomprehending, uncooperative, and rigid. Ironically, we as professionals often view each other in the same way.

2. In the school culture, "busyness" is the norm. Faculty treasure their time. While they may be interested in pursuing study of a topic such as "Futures," they are also reluctant to give it much time, since their first responsibility is to address the immediate needs of youngsters. "What is good" is thus "not so good" if it steals time from this important and urgent function. As a corollary to this tendency on part of teachers to covet their time, school planners often underestimate the processing time needed in planning efforts. Thus, planning processes often take longer than anyone anticipates, and resentment for the time spent in thinking grows, often with a parasitic effect among participants.

3. A strain of anti-intellectualism runs through most school staffs. A survey of lounge conversation, for example, seldom yields insight into the thinking of staffs on conceptual matters. Analyses of the

contents of department meetings frequently show heavy emphases on procedural matters; much less frequently do they show faculty interacting with one another on the contents of the disciplines they teach.

4. Historically, school staffs have tended to define schooling and education as synonymous, and they have further interpreted education as being their domain. From this operational mindset, they frequently experience difficulty in sharing responsibility with others from outside the profession. Furthermore, they commonly have difficulty in making compromises, especially with non-professionals.

The implications of these tendencies as we pursue the planning process in our individual groups are several. First, teachers must be cultivated as resources to the planning and later implementation processes. Without teacher support, the results of the planning process are doomed to mediocrity from the outset. Second, don't assume that teachers will accept the demands on their time. Take the time to create a sense of urgency and importance among faculty for their involvement in the planning process. Third, provide quality input to staff in attempting to stimulate futures thinking. The presentations earlier today are good examples of the quality necessary. In essence, don't assume that staff are prepared to participate mindfully simply because they are professionals. Fourth, when staff have done some thinking on futures issues, begin to involve them with community representatives to share thinking. Don't rush the process. It is important that all participants are comfortable with their own thinking before they are asked to risk with others. Lastly, encourage staff to "be themselves" in the dialogues with each other and with community representatives. Trust the process. If participants believe they are being manipulated to take a "system" position, it would have been better not to have involved them at all in the process.

Synthesis.

To this point, the importance of involving community representatives and faculty in the futures planning process has been emphasized. As a way of further encouraging development of a new synergy from the thinking of both groups, five principles are submitted for consideration. Hopefully, these principles and a few suggestions with respect to their implications can serve to tie together our thinking.

Principles.

I. The way the change process is conceptualized is more powerful in determining the success or failure of school change effort than is the change one seeks to implement.

II. To the extent that the planning for change effort involves all who will be affected by the change, the change effort can be meaningful. This principle implies the need to resist any tendencies to involve in the planning process "supporters" while keeping out "resisters" and the "perceived indifferent." It also implies a need to be careful not to "over-credential" the initial planning group and, in the process, scare other potential participants away.

III. The discussion of means often leads to the transformation of ends and dialogue on means often leads to restructured power relationships. Unless dialogue is approached openly and power trade-offs are viewed as norm rather than exception, the dialogue becomes manipulative and is no dialogue at all.

IV. The importance of "constituency building" and "resource sharing" must be engraved in our attitude as we carry out the planning process. Unless we believe that schools and those involved in the planning process will be richer for the planning effort, the power of the process as well as the outcomes of the process will be minimal at best.

In essence, we have with a futures planning emphasis a unique opportunity to strengthen further the quality of schooling and to overcome weaknesses too frequently built into program planning processes. Making the most of this opportunity calls for more risking, more sharing of ourselves, and more openness than have characterized our planning processes historically. We <u>can</u> make the necessary transformations if we can be highly supportive of one another and initiate the thinking, sharing, and supportive processes <u>right now</u>. Let's get to work!

EDUCATION IN THE FUTURE*

A Background Paper
Prepared For
Ohio's Commission on Educational Excellence

*This report contains all issues presented in the Slide/Tape presentation by the Ohio Department of Education and shown on May 6, 1983.

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SUMMARY OVERVIEW

Future society is expected to be characterized by numerous and oftentimes rapid change. Although it is not possible to predict the exact nature of the future, it is possible to identify actual or probable trends that will impact upon society's institutions. For example:

-- This country's population will become progressively older.

-- The number of school-age children will decrease through the mid 1980s, then begin to increase.

-- The annual number of births will continue to increase.

-- Our minority population will increase at a rate greater than the nonminority population.

-- Adults with children in school will continue to be outnumbered significantly by adults without school-age children.

-- The number of women in the workforce who are mothers with school or preschool age children will increase.

-- The number of three and four year olds enrolled in formal preschool programs will rise.

-- Adults will pursue continuing education mostly for job-related reasons at an increasing rate.

Besides these trends in demographics and social patterns, numerous and dramatic positive and negative changes are expected to result from technological advances in areas such as microprocessing, robotics, communication systems, biogenetics, and biomedicine.

Directly or indirectly our country's educational system will be affected by these anticipated trends and changes. Therefore, it is crucial that educators at all levels undertake efforts to look beyond the present, anticipate change,

and plan if they are going to be successful in preparing our country's young people to live in the world of the future.

The State Board of Education has initiated such an effort at the state level by establishing the Commission on Educational Excellence. The commission, composed of civic, business, labor, and agricultural leaders as well as representatives of Ohio's major education organizations, will assist the Ohio Department of Education to 1) identify and assess trends and issues that will affect Ohio schools in the future; 2) formulate objectives to be pursued by Ohio schools; and 3) generate strategies for obtaining those objectives. Questions on which the commission will focus include:

-- What will be the impact of technology on teaching and learning?
-- What type of delivery system will meet the educational needs of the future?
-- How can educators best equip themselves to function in a world of anticipated rapid change?
-- What should be the outcome of learning?
-- How can educational equality best be assured?
-- How can educational professionals best be prepared?
-- How can schools become more fiscally and programmatically accountable?

A major and important task is being undertaken by the commission. The future of our communities, our state, and our nation depends upon the ability of our schools to prepare youngsters to live in tomorrow's world. This is a challenge that cannot be ignored.

BACKGROUND

Public schools shape and are shaped by our society. Although debate exists as to whether the educational system leads or is led by other social forces, it is clear that schools do not now, nor have they ever operated in isolation.

When schools were established to produce the educated citizenry thought necessary to maintain a democratic form of government, most Americans could not read or write. Teaching literacy was considered a major societal as well as educational goal. But today's schools are expected to go far beyond this basic aim.

The Chief State School Officers Committee on Coordinating Educational Information and Research points out that schools have been changing rapidly in the last several decades due to "increased and varied demands from society, the economy, the courts and the legislators."[1] Current school programs are as varied as the educational needs of the populations that they serve. Modern schools provide education for all handicapped children; remedial and supplementary programs for disadvantaged and migrant students; bilingual programs for limited and non-English speaking children; enrichment programs for children who are gifted and talented; vocational training for students who desire it; and college preparatory instruction for students planning to pursue education beyond high school.

Much of the diversification of public education has occurred during a period of growth in enrollment and funding that took place in the late 1960s and the 1970s. Enrollment peaked in 1969 in elementary schools and 1976 in secondary schools. Expenditures for education increased from 5.1% of the 1960 Gross National Product (GNP) to 8.6% of the 1978 GNP. In 1960, education expenditures comprised .7% of the federal budget. In 1978 that percentage had increased to 5.2%.[2]

The education system currently is experiencing little or no growth, and in some cases, decline due to a drop in student enrollment, cutbacks in federal funding for education, and reduced public confidence in schools. But such periods oftentimes provide good opportunities for reflecting on past successes and shortcomings, and anticipating and planning for the future.

The recent problems that many local school districts have had generating public support for school operating levies underscores the point that in our changing society, education cannot afford to be an introspective system that attends only to current educational needs. The education system at all levels must look beyond the present and plan for the future. To be meaningful and productive, this planning process must include noneducators as well as educators.

As a part of its effort to plan for education through the end of this decade and beyond, the State Board of Education has established the Commission on Educational Excellence. This commission, comprised of business, labor, agricultural, and civic leaders as well as representatives from the state's major education organizations, will assist the department to identify issues that will affect Ohio schools in the future, assess the impact of these issues, and formulate objectives that public schools in Ohio should pursue. The commission will generate recommendations for actions that could be taken by the State Department of Education and local school districts to achieve stated objectives and suggest areas for possible state or federal legislative attention and/or research.

A probable starting point for this process is the identification of factors that will most likely influence society in the years ahead. Known and probable trends that will impact directly or indirectly on education are discussed in the next section. Others may be identified by the commission for attention.

ANTICIPATED TRENDS

Considerable interest in the future has been evident in recent years. Perhaps this interest results from a perception that we are entering an era that will demand major changes in our institutions or perhaps futurism affirms the belief that by anticipating the future we may help shape it. The purpose of this section is not to present all of the various futuristic theories, but rather to focus on some of the current and probable demographic, social pattern, and technological trends that will affect our future society. These trends have been identified from demographic reports and projections, and opinions of futurists and education professionals.

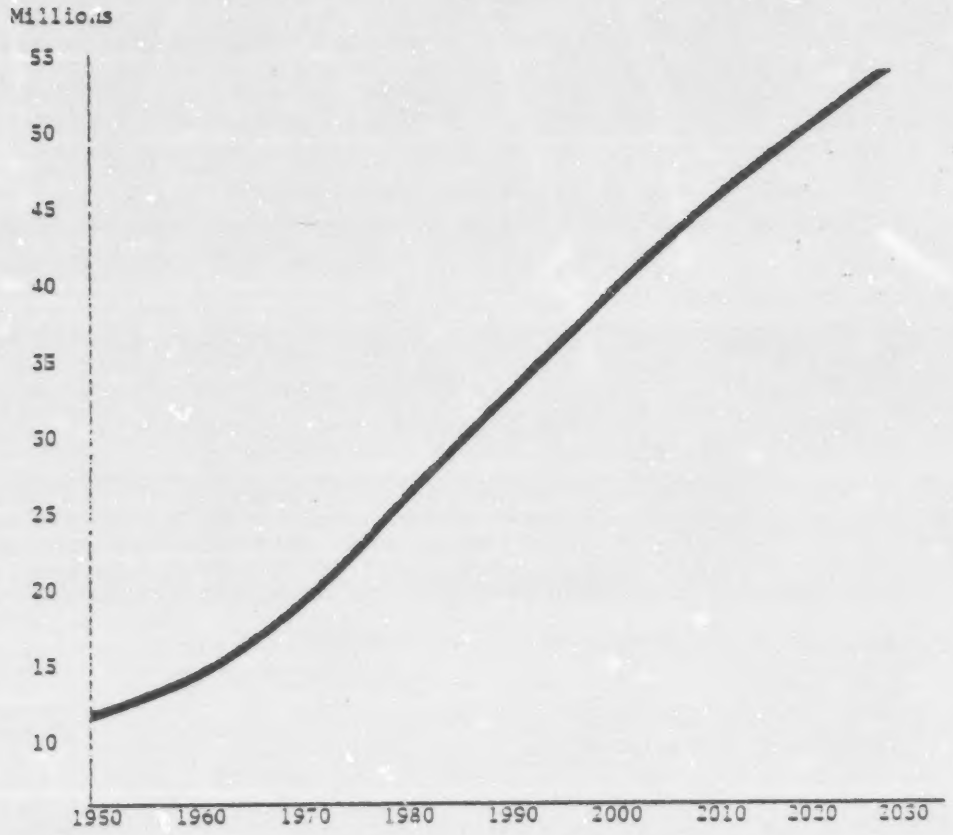
The Aging U.S. Population

One of this country's more significant demographic changes is the aging of the population. As the birthrate has declined from its peak in 1957 and as medical and other advances have increased longevity, the population of the country has and will continue to become gradually older.[3] As Table One illustrates, currently about 11%, or 25 million of our population, is over 65. That percentage will increase to 20% by the year 2030, resulting in an estimated 55 million Americans 65 years or older.[4]

The aging of the population, coupled with the decline in the late 1960s and 1970s in the number of births, also has meant a lower percentage of the population with children in school. Indeed, an estimated 31% of adults currently have school-age children as compared to 44% in 1972. Results from the annual Gallup Poll of Public Attitudes Toward the Public Schools, as well as the survey of Ohio citizens conducted by the Hubbell Associates for the Ohio Department of Education, indicate that people without children in school usually are more critical of the schools than parents with school-age children.

TABLE ONE

AMERICANS 65 OR OLDER



Source: Mary Barberis, America's Elderly: Policy Implications, Population Reference Bureau, Inc. (Washington, D.C.: January 1981)

Decreasing Local Support for Schools

The changing sentiments of the community toward public schools and the changing community itself have resulted in many districts throughout the nation and in Ohio experiencing difficulties in passing school operating levies. Only 47% of school levies have been passed in Ohio since 1972, compared to the 75% that were passed between 1962 and 1971. Levy failures have contributed to the relative decline of local dollars earmarked for schools. While the Consumer Price Index increased 130% between 1970-80, local dollars for schools increased only 73%. As Table Two indicates, in 1970 local dollars comprised approximately 66% of total support for Ohio schools. That percent had decreased to 46% in 1981. The relative decline in local support for Ohio schools has contributed to the 281% increase in state funding for elementary and secondary education between 1970-80.

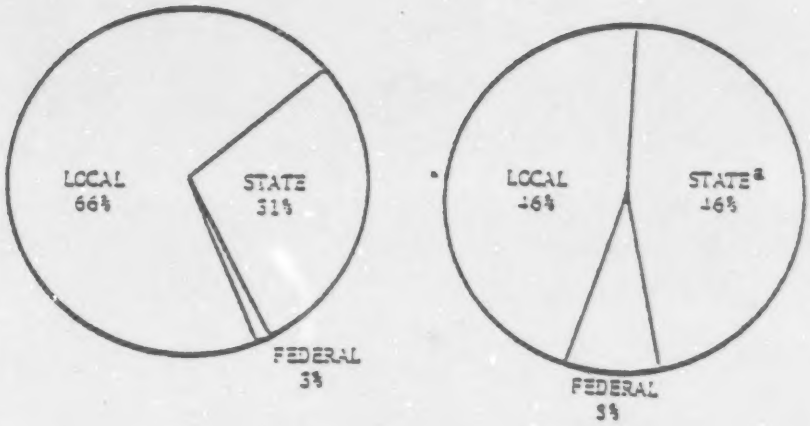
Future school administrators will need to be adept not only at school operations but also communications, management, marketing, and public relations if they are to secure the support of the public they serve. Further, they will need to be innovative and to explore new ideas. The Council of Chief State School Officers suggests the concept of "brokering" or using individuals in the community to provide instruction as an example of an idea that could be explored as a method of increasing the quality and relevance of instructional programs while strengthening the community ties with the schools. Other ideas that have been suggested include the establishment of foundations for the public schools or school-business partnerships.

School Enrollment Increase Predicted

Skills in forecasting and planning for multiple and sometimes contradictory futures also will be assets for future administrators. Currently schools are experiencing a decline in total enrollment. As Table Three indicates, the total school-age population will continue to decrease through the middle of this decade.[5]

TABLE TWO

SOURCE OF FUNDS FOR OHIO SCHOOLS

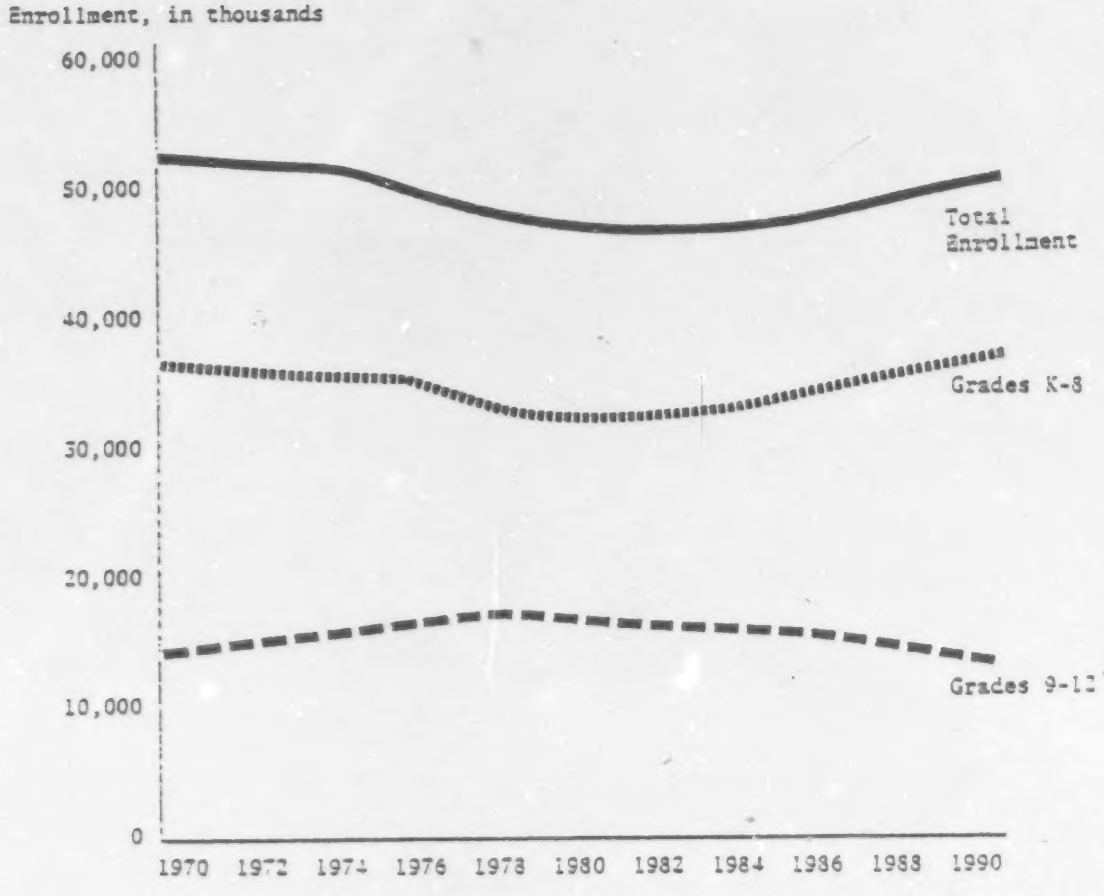


[a]Includes Homestead and Rollback Exemptions

Source: Ohio Department of Education

TABLE THREE

NATIONAL ENROLLMENT



Source: U.S. Department of Education, National Center for Education Statistics, Projections of Education Statistics to 1990-91.

However, enrollment in grades 9-12 is projected to decrease through the end of the decade. It is expected that in 1989 three million fewer 9-12 grade students will be enrolled in school than in 1978. But while high school enrollment will be declining significantly, elementary enrollment will increase and by 1985 will exceed the 1978 elementary enrollment by one million.[6] Some predictions indicate that by the late 1980s annual births will total 4 million, the highest total since 1964 and close to the all-time high of 4.3 million births in 1957.[7]

This expected increase in elementary school enrollment is due to the recent increase in childbirths among women who had delayed motherhood while pursuing an education or career. It is expected that this tendency toward delayed childbirth will continue as women pursue education or careers outside the home. Also, it is expected that many of the women who leave the workplace to have children will do so temporarily.

Changing Social Trends

Financial necessity as well as increased desire by women for careers outside the home has contributed to the dramatic increase in the last 30 years of the number of working mothers. In 1950, 20% of mothers of children under 18 were in the workforce, as compared to over 50% in 1980.[8] Many families have found that two incomes are needed to make ends meet. In other cases, women must work because they are the sole wage earners of the family.

The number of children under 18 living with only one parent has increased 67% during the last 10 years. Currently, one-fifth of children under 18 live in a one-parent household.[9] Meanwhile the divorce rate is expected to remain high. It is estimated that 30-40% of children born this year will live in one-parent families.[10]

Although the number of mothers in the workforce has increased overall, women with children under six years old is one of the fastest growing subgroups of working mothers. According to recent reports, 46% of all mothers with children under six are currently in the workforce.[11] This development has contributed to

a significant change in education -- the growth of preschools.

The Extension of Schooling

The National Center for Education Statistics indicates that although the number of three and four-year olds declined from 7.6 to 6.2 million between 1968 and 1980, the number of these children enrolled in preschool increased during that same period from 1.3 to 2.3 million, as is illustrated in Table Four. In 1980, 36.7% of three and four-year olds were enrolled in preschool, as compared to 17% in 1968.[12] Interestingly, in 1968, 45% of preschool attendees took part in programs offered by regular public schools, while the remaining 55% attended private nursery schools. However, in 1980, only 37% of preschool attendees were enrolled in public programs. Racially, 80% of preschool enrollees are white, 16% are black and 4% are Hispanic. In 1980, the majority of black and Hispanic children attending preschool were enrolled in public programs, while 69% of white preschool attendees were enrolled in private preschools. Preschool enrollment is expected to increase in 1989 to 41% of the population of three and four-year olds.[13]

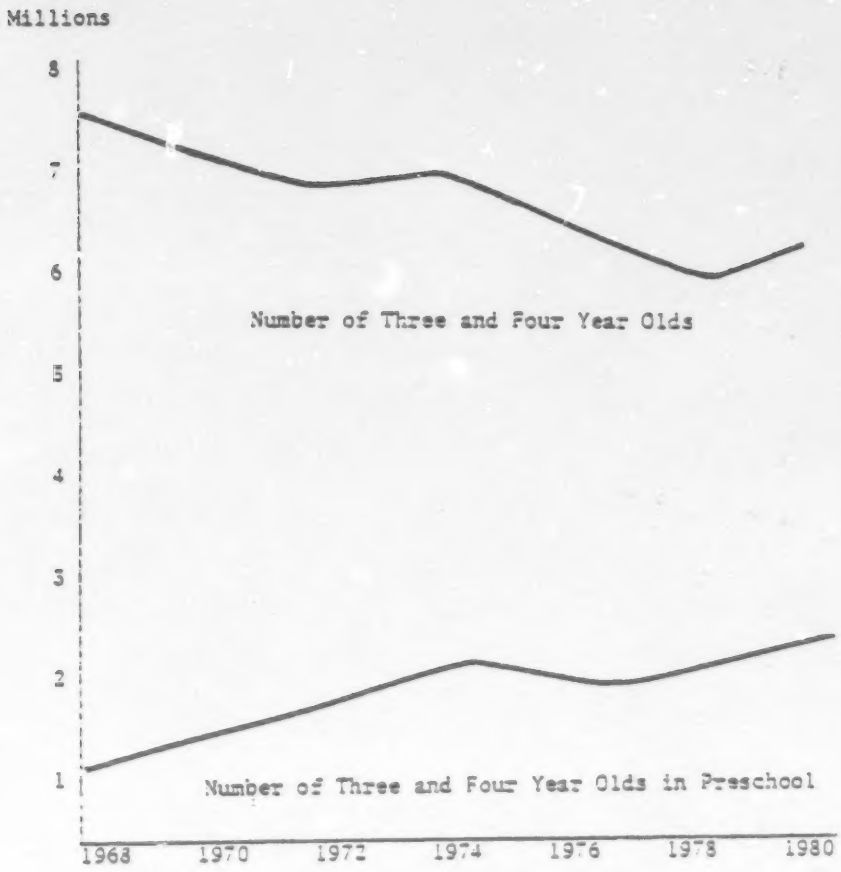
As the number of preschoolers attending school has increased, so too has the number of adults pursuing education. The National Center for Education Statistics reports that one in eight adults in the United States, or 21 million men and women over age 24, took adult education courses between May 1980 and May 1981. Seventy percent of the women and 96% of the men were employed while taking the courses and a majority of the courses -- 61% -- were taken for job-related reasons. Although the majority of the course takers were between 25 and 34, the number of individuals 55 and older pursuing adult education is increasing.[14]

The Changing Work Place

Futurists such as Harold Shane (1975) and Edward Cornish (1979) predict

TABLE FOUR

NUMBER OF THREE AND FOUR YEAR OLDS
AND
NUMBER OF THREE AND FOUR YEAR OLDS IN PRESCHOOL



Source: Milton Chorvinsky, Preprimary Enrollment 1980, National Center for Education Statistics (Washington D.C.: 1981)

that adults will increasingly pursue education to keep current with their present jobs or to retrain for new ones. Numerous occupational changes are expected as a result of advances in technology and the changing nature of the job market.

For example, robots will be increasingly used in the workplace to perform sophisticated tasks. An estimated one hundred robots were used in the United States in 1970. This number increased to 3,500 in 1980 and is expected to increase to 175,000 by the end of the decade.[15]

Although some jobs may be eliminated due to advances in areas such as robotics, other positions will be created by technology. Overall, technological advances are expected to result in a dramatic increase in the demand for a more skilled and educated workforce.

Writers such as Weiner (1980) predict that the rapidly changing job market will be one factor that draws the corporate and education communities closer together to plan educational programs to meet the future employment needs of businesses and students. Authors such as Shane (1976), Toffler (1980), Cornish (1979), and Botkin, Elmandjra, and Malitza (1979) believe that work and school experiences should become more interrelated in the future.

Indeed, closer ties between schooling and the world of work may be necessary to help curb the high unemployment rate among youth and young adults. This rate is particularly high among minorities. In 1979, 33.5% of minority 16-19 year-olds and 18.8% of 20-24 year-olds were unemployed. The unemployment rates for white youth and young adults that year were 13.9% for 16-19 year-olds and 7.6% for 20-24 year-olds.[16]

The Method and Content of Education -- Future Directions

Youth unemployment and other education related problems of young people may be due to a mismatch between the student and the instructional method used.

Glaser (1975) points out that early home experiences provide children with a set of skills for learning to learn and process information. The skills learned by middle class children in their home environments better equip them to succeed within traditional schools than do the skills learned at home by lower class children. Consequently, from the very beginning, school may be a less positive experience for both minority and nonminority lower class students than it is for their middle class counterparts.

Shane (1974) and Botkin, Elmandjra, and Malitza (1979) state that schools of the future must not ignore cultural or other individual differences when instructing students. Schools, say these authors, need to adapt to all children's learning status to foster success. To assist in doing this, the Council of Chief State School Officers Committee on Coordinating Educational Information and Research believes that a concerted effort must be made to identify those programs that have been used successfully with special needs students such as the disadvantaged, handicapped, limited English speaking, and gifted and talented. According to the Committee, schools in the past have not been as successful in teaching these children as they have other students.

This country's commitment to educational equality demands that the concept of equality be translated into an effective, practical program. The need to identify programs that can do this will become even more important in the years ahead, since the minority population of this country is expected to continue to increase at a rate greater than the nonminority population. Between 1970-80, the total U.S. population increased from 205 to 227 million, or 11%. But during that same period, the population of black Americans increased 17% to 26.5 million, while the population of Spanish-speaking Americans grew 60% to 14.6 million.[17] These increases are mostly attributable to higher birthrates among minority than nonminority women and immigration, particularly of Hispanics. Some demographers predict that Hispanics may replace blacks as our country's largest minority group.[18]

As efforts are underway to determine how instruction can best be provided to each child, educators also must determine what knowledge and skills will be needed by all students to function in a society influenced by rapidly advancing technology. To illustrate the rate of change in this area, Christopher Evans in his book The Micro Millennium states that Alvin Toffler's book Future Shock, published in 1970, "showed an astute awareness of impending technological developments, but contains not one single reference to the most sensational instrument of all -- the microprocessor."[19] The reason for this omission, Evans explains, is that the microprocessor did not exist when Toffler wrote Future Shock.

For children to learn to function in a rapidly changing environment, writers such as Bell (1975), Botkin, Elmandjra, and Malitza (1979), Combs (1981), Kauffman (1976), and Shane (1975), believe the school curriculum of the future must emphasize skills such as identifying, analyzing, and solving problems; anticipating and planning; evaluating consequences of decisions; determining interrelationships; and locating needed information. In addition, it is believed that students should be taught how to use devices such as microcomputers to assist them in learning information processing and problem-solving skills.

Yet as technology is more widely used in education, some authors such as Evans (1979) and Dede (1980) believe that a learning gap will develop between students who "take to" computers and those who do not, giving those students who acquire information processing skills advantages over students who do not. Since interest in and use of computers depends first of all on equipment availability, students from financially better off schools may have more access to computers than students from systems where money for new equipment is less. Too, students from middle and upper middle class families will have more exposure to microprocessors in the home than will students from poorer families. As Luvern Cunningham (1982) points out, schools of the future will be challenged to give all

students access to instructional technology.

The expected trend toward rapid technological advance also has implications for some of the traditional curriculum areas, in particular math and physical science. Currently, only 34% of high school students take three or more years of high school mathematics and only 23% take three or more years of high school science.[20]

This is a source of concern to many since high technology industries will need more highly trained staffs in the future. Already some concern is being expressed over a shortage of engineers in our country. In 1980, 17,000 entry level engineering jobs went unfilled in the United States. This country's current and projected engineer shortage appears even more acute when considered in relationship to the engineer supply in other countries. Japan, for example, with one-half the population of the United States, graduates 5,000 more electronic engineers per year while the number of engineers graduated in the Soviet Union is triple that of the United States.[21]

Teachers -- Current and Future Professional Concerns

While the need to stress mathematics and physical science instruction is growing, the number of teachers qualified to teach these subjects at advanced levels is declining. Fewer education students choose math or science as their major area. Those that do oftentimes never teach, since they find employment outside education to be more lucrative. This is particularly true of mathematics education majors. Only 55% of these graduates actually enter teaching. To date the rate of decline in qualified mathematics and science teachers is three times greater than the rate of decline of school enrollment.[22]

Paralleling the decline in numbers of math and science teachers has been a decline, as measured by the Scholastic Aptitude Test (SAT), in the quality

of students entering the teaching profession. The SAT scores for students planning to major in education have been declining at a greater rate than the average SAT scores for all students. In 1982, high school seniors taking the SAT had average scores on the verbal and math portions of the SAT of 426 and 467 respectively. The average scores for prospective education majors, however, were 394 on the verbal portion and 419 on the math portion of the test.[23]

Educational leaders must give attention to recruiting quality students and retaining skilled teachers, but they also must determine how teachers can best be educated to teach in schools of the future. In the opinion of Adler (1982), the curriculum for future education professionals should be more demanding than it is presently. Teachers, believe Adler and Pulliam and Bowman (1976), should be lifelong learners who have mastered those skills such as analyzing and solving problems that they in turn will need to teach their students. Rubin (1975) believes education students must be taught to appreciate individual differences in student temperaments, learning styles, and cultures.

Since the schools of the future are expected to make use of learning technology, future teachers also will need to be taught to use that technology wisely. Indeed, Botkin, Elmandjra, and Malitza (1979) believe that the role of classroom teachers will be changed by technology. They expect teachers to be freed to provide extra instructional assistance to students who need it or to enrich instruction of those students desiring to go beyond the basic instructional level. Florence Hood (1980) concurs. She contends that technology will cast teachers in the role of motivators and learning guides. However, for teachers to serve in this capacity, Glaser (1975) states the emphasis of teacher preparation programs must not be on the management of the class as a unit, but rather on the learning of individual students. In other words, education programs must prepare teachers to evaluate, diagnose, and make decisions required to guide individual student performances.

Socialization and the Schools of the Future

As technology impacts on elementary and secondary school curricula and teacher education programs, it also may change education in other ways. Currently, education is a labor-intensive endeavor. According to the Council of Chief State Schools Officers Committee on Coordinating Educational Information and Research, 80% of costs of education are personnel related.[24] Labor-intensive industries are most costly to operate than capital-intensive industries because salaries rise faster than capital costs. As learning technology becomes more sophisticated and inexpensive, education may become more capital-intensive. Others such as Alvin Toffler (1980) are predicting that technology will bring about the decentralization of education. Instruction utilizing learning technologies such as microprocessors or video discs can occur in homes, libraries, and other locations outside traditional school buildings.

But other writers believe that the role of the school as a socialization institution will be even more important in a technologically advanced society. In Shane's (1976) opinion, schools of the future should be key institutions for teaching human relations, consensus building, and the art of compromise. These skills are particularly important for individuals living in a democracy. Botkin, Elmandjra, and Malitza (1979) point out that one of the most significant trends of our time is the increasing demand for participation or formal sharing in decision making. To be effective, say these authors, participation must be accompanied by anticipation which is the creation of possible and desired futures and the selection of plans and actions to bring them about. In addition, participation must be undertaken in the spirit of cooperation, dialogue, and empathy. Too often participation is not characterized by these attitudes and becomes, in Botkin, Elmandjra, and Malitza's words, "participation by veto." In other words, groups are more skilled at blocking plans than formulating constructive alternatives

Knowing how to constructively participate is particularly important in the exercise of civic responsibilities. Schools of the future can assist students to be responsible citizens, believes Adler (1982), by first making them active participants in the learning process. Discussion of key ideas is a form of active participation that is crucial in schools in a democracy. Discussion teaches students to analyze their own and others' thoughts, a characteristic important in promoting interpersonal and international communications.

The latter is becoming even more vital as communication technology has contributed to the recognition that the nations of the world are becoming increasingly interdependent. Problems such as dwindling energy supplies, population growth, and food shortages transcend national borders. As Botkin, Elmandjra, and Malitza (1979) point out, a "world problematique" has emerged requiring mutual decision making and cooperation among nations. Such international cooperation may be enhanced if greater sensitivity to and appreciation for cultural differences are taught in schools, believe the authors. It is the opinion of Barkin and Guntermann (1982) that global interdependency also underscores the need for Americans to be able to communicate in a foreign language. Since foreign language study introduces students to the imagery and conceptual framework of the cultures in which the language is spoken, it is a good way to learn about other cultures.

Schools and the Analysis of Values

Advancements in communication technology have helped create awareness of cultures other than our own. But as Cornish (1979) indicates, some advances in communication and other technologies have lead to isolationism -- one of the negative aspects of technological advancement. Cornish states that television has resulted in more people staying home, thus decreasing community interaction. This trend may continue as more people use microprocessors for shopping and banking and cable television systems to "attend" concerts, plays

and movies. An important role of the schools of the future may be to anticipate possible disadvantages of expected technological changes to determine if schools could play a role in overcoming these disadvantages.

Too, it is believed that many scientific and technological advances, particularly in the biogenetic and biomedical areas, will raise moral and ethical issues which will precipitate policy debates. For example, Shane (1981) reports that scholars participating in Phi Delta Kappa's Diamond Jubilee curriculum project predicted that a major split will develop between those individuals who believe the biosphere must be exploited to satisfy basic human needs and those who see the earth as a closed system, requiring a better balance between man and his environment.

Indeed, as Taviss (1971) indicates, examination and discussion of social problems which may result from technological advances often point to the need to analyze societal values. Many writers such as Cole (1981), Toffler (1980), Botkin, Elmandjra, and Malitza (1979), Bell (1975), and Shane (1976) believe the schools of the future will need not only to foresee the potential positive and negative results of societal changes, but also to assess values, since values play an important role in the decision making of individuals and nations.

QUESTIONS

Consideration of the trends and implications discussed in the preceding section leads to seven initial areas of questions that should be asked in efforts to determine the best course education should follow in the future.

First, how can educators best plan for and adapt to rapidly changing conditions? Who besides educators should be involved in such planning efforts? What information should be considered? What planning techniques should be most successful?

Second, what skills and knowledge will be most important for educational professionals to possess? What curricula should be required for future teachers and for school administrators? What additional skills will current teachers need to acquire to teach in the classrooms of the future?

Third, what should students be taught to prepare them to live in the world of the future? What subjects are most crucial for students to learn? How can a school system select a curriculum that fits the actual and perceived needs of the community?

Fourth, what impact will technology have on education? How can technology best be utilized in the teaching and learning process? How should the curricula be adjusted to accommodate the impact of technology on society? What methods should school personnel use to assess the advantages and disadvantages of technology?

Fifth, how and where can education best be delivered? What are the advantages and disadvantages of providing instruction by technology outside the classroom? To whom should education be delivered? Should public schools be more active in preschool and adult programs?

Six, how may educational equality be assured? How can schools best maintain the advancements made in providing educational equality? How can systems prevent new inequalities from emerging? What methods have best enabled schools to provide equal educational opportunities for all students regardless of race, sex, ancestry, national origin, religion, or handicap? What programs have been most

successful in providing instruction to disadvantaged, migrant, and special education students?

Finally, how can school districts and schools become more fiscally and instructionally accountable to the public they serve? How can schools best assess the actual and perceived educational needs of the community? How can educators best develop instructional programs that will address these identified needs? How can relations between the school and its public be strengthened?

These seven areas are in need of investigation by the commission. As it proceeds in its efforts the commission may identify additional areas for research and discussion.

FOOTNOTES

[1]Council of Chief State School Officers, Committee Report -- Research Agenda for the 1980s, (Washington, D.C., November 14, 1981), p. 3.

[2]Breneman, David W. and Nelson, Susan C., "Education and Training," in Setting National Priorities Agenda for the 1980s, Joseph A. Peckman, ed., The Brookings Institution (Washington, D.C., 1980), p. 205.

[3]Diggs, J.F., "Baby Boomlet -- Its Impact on the 80s," U.S. News and World Report, Vol. 90, June 15, 1981, p. 51.

[4]Barberis, Mary, America's Elderly: Policy Implications, Population Reference Bureau, Inc., (Washington, D.C., January 1981), p. 3.

[5]Current Population Reports, U.S. Department of Commerce, Bureau of the Census, Series P-25, No. 870 (1976-79), No. 704 (1977-2050).

[6]Frankel, Martin M. and Gerald, Debra, Projections of Education Statistics to 1988-89, National Center for Education Statistics, (Washington, D.C., April 1980).

[7]Diggs, J.F., op. cit., p. 51.

[8]Churchman, Deborah, "Day Care in Private Homes," The Christian Science Monitor, Vol. 74, August 9, 1982, p. 19.

[9]Stout, Richard L., "Census Bureau Figures Show Fewer Traditional Families, More Poverty," Christian Science Monitor, Vol., 74, August 10, 1982, p. 5.

[10]Bane, Mary Jo, et al., Focus on the Family, New Images of Parents and Children in the 1980s, Center for Parenting Studies, March 1980, p. 9.

[11]Robey, Bryant and Russell, Cheryl, "How America Is Changing -- 1980 Census Trends Analyzed," American Demographics, July/August 1982, p. 21.

[12]Frankel and Gerald, op. cit., pp. 3, 18.

[13]Kahn, Gerald, School Enrollment of 3 and 4 Year Olds by Race/Ethnic Category, National Center for Education Statistics, (Washington, D.C., October 1980).

[14]Participation in Adult Education, National Center for Education Statistics, (Washington, D.C., May 1981).

[15]Feldman, Marvin, President of the Fashion Institute of Technology, Presentation to the National Association of State Directors of Vocational Education Fall Leadership Development Conference, September 14, 1982.

[16]Breneman and Nelson, op. cit., p. 222.

[17]Robey, Bryant, "Age in America," American Demographics, Vol. 3, July/August 1981, pp. 16-17.

[18]Barberis, Mary, "Hispanic America," Editorial Research Reports, Vol. 2, July 30, 1982, p. 551.

[19]Evans, Christopher, The Micro Millennium, (New York, Viking Press, 1979), p. 102.

[20]High School and Beyond--A National Longitudinal Study for the 1980s, Report No. 1, A Description of High School Students in New York State and the Nation, The University of the State of New York and the State Education Department Information Center on Education, (Albany, N.Y., April 1982), p. 5.

[21]Henderson, Robert P., "Forecasting Needs: The High Technology Industry," in The Education-Enterprise Relationship: Meeting the Needs of a Productive Society, Roberta Felker, ed. pp. 30-45, National Association of State Boards of Education, April 1982, p. 31.

[22]Klein, Sarah, President of the National Science Teachers Association, Testimony Before the Committee on Labor and Human Resources of the United States Senate, 1982.

[23]National Report on College-Bound Seniors, 1982, College Entrance Examination Board, 1982.

[24]Council of Chief State School Officers, op. cit., p. 14.

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PLANNING FOR CHANGE

University Circle Incorporated

Presented by

Joseph Pigott, President

and

Gilbert Brooks, Vice-President

May 6, 1983

UNIVERSITY CIRCLE INCORPORATED *
10831 Magnolia Drive
Cleveland, Ohio 44106
(216) 791-3900

University Circle... a tradition of excellence in the arts, medicine, education, religion, history and social service ... is a community where Clevelanders work, live, learn ... and find enrichment and challenge.

University Circle has played a vital role in Cleveland's evolution as an economic powerhouse and a sophisticated urban center. And the institutions of University Circle are vital to Cleveland's ability ... now and in the future ... to be a great city.

The Circle institutions bring national and international prestige to Cleveland by making important contributions to mankind.

It is a leading international center for cardiovascular research and treatment.

The Museum of Art displays the nation's finest collection of Far Eastern Art.

Case Western Reserve ranks as one of the nation's leading private research universities.

The doctors, technicians and scientists of University Circle, working together, make Cleveland one of the world's leading centers in the development of artificial hearts and other organs.

An anthropologist from the Museum of Natural History made a breakthrough discovery of a new species of man ... the first such discovery in 15 years.

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* This is the narrative which accompanied the slide presentation about the role of University Circle in Cleveland.

The Cleveland Orchestra is recognized as one of the best ensemble of virtuosi musicians in the world.

The institutions of University Circle offer every Clevelander and his family the opportunity to ... train and stimulate his mind ... reward his spirit ... renew his senses ... and heal and care for his body.

University Circle also makes a dramatic and far-reaching impact on the Greater Cleveland economy.

University Circle institutions have a total annual payroll of nearly $300 million.

And Circle employees pay $50 million a year in income taxes alone.

The capital value of Circle facilities is more than three-quarters of a billion dollars.

Circle institutions log about 20 million visitors each year.

And Circle institutions spend more than $100 million each year for the purchase of goods and services -- mostly from Cleveland based companies.

Health care is the second largest industry in the nation in total jobs and payroll.

As the center of one of the world's leading health science complexes University Circle ensures Cleveland a leading share of this fast-growing service industry.

University Circle's research institutions have generated the ideas and technology to help Cleveland-based industry stay on the cutting edge.

In the 1890's, Professor Albert Smith helped a young student work ou a process to extract magnesium and bromine from sea water. The student

was Herbert Dow, who later founded Dow Chemical. Professor Smith's sons organized Lubrizol Corporation headquartered in Cleveland.

Because of that partnership between University Circle minds and Cleveland industry ... Republic Steel was one of the first steel companies in the nation to develop an automated rolling mill ... and Warner & Swasey computerized key segments of its machine tool production.

Today, collaboration between University Circle's medical and research institutions and firms such as Gould, Inc. and Ohio Nuclear are stimulating Cleveland's growing biomedical industry.

As one of the nation's largest concentrations of corporate headquarters, Cleveland must attract and hold the talent to manage, advise and service sophisticated corporate needs.

University Circle's complex of graduate and professional schools, laboratories and clinics generated that brain power. Case Western Reserve University awards 1,400 professional degrees each academic year.

The constellation of institutions in the Circle acts as a magnet ... attracting talented executives and professionals to Cleveland from throughout the world.

University Circle. A community committed to excellence and achievement ... and a key component of the Greater Cleveland economy.

This concentration of cultural, scientific and economic power functions and grows as a community because of an organization called University Circle Incorporated. UCI creates and sustains an environment in which Circle institutions can flourish.

The University Circle Inc. transportation system links the people and places of the area.

UCI provides convenient parking for the 40,000 people who live or work in the Circle each day.

For the 20 million people who use the Circle each year, University Circle Inc. works to make the community safe.

UCI owns and maintains more than 400 residential units in Circle neighborhoods.

And UCI is the advocate for a physical environment worthy of the fine institutions located here.

Responding to an environment of renewal and growth the major Circle institutions have recently made substantial new investments in their own growth and development including ...
University Hospital's new $6 million emergency services building ...
the Veterans Administration Hospital's new research wing and outpatient facility ...
and Mt. Sinai's new parking garage.

Case Western Reserve University is renovating and expanding the student activity center, and the Cleveland Clinic is planning a $100 million expansion to East 105th.

UCI also sustains an environment in which new institutions can be created. These include ... Ronald McDonald House... a home where children with cancer and other life-threatening diseases can stay with their parents while undergoing treatment.

The new headquarters for the Arthritis Foundation --Northeastern Ohio Chapter.

Share-A-Home, Inc. ... an experiment in family living for elderly persons who want to remain independent.

Hitchcock House .. a residence for recovering women alchoholics.

A new home for the Great Lakes Arts Alliance.
And world headquarters of the International Society for Artificial Organs.

UCI also provides a positive environment for new venture capital investment in the Circle ... commercial development that enhances the unique quality and flavor of the area. That Place on Bellflower represents a fresh approach to fine French dining along with Isabella's ... a new Circle restaurant and The Greenhouse ... an innovative mix of old and new architectural design on the site of the old Minillo's.

Committed to preserving and restoring the special architectural flavor of the area ... UCI brought together Circle organizations, the city, the Federal Housing Administration and private developers to restore Fenway Monor and University Circle Place for residential use.

UCI works with local community organizations to stabilize and renew the neighborhoods surrounding the Circle. UCI joined forces with community leaders to create new single family, townhouse and high-rise housing in Hough.

UCI and Holy Rosary Church of Little Italy built Abington Arms ... a new apartment complex designed for the elderly and handicapped. Abington has special services recommended by the health and special service agencies in the Circle.

Since 1970, UCI and the neighborhood organizations in the Circle community have built 1,100 new or renovated living units -- attracting $25 million in private investment.

University Circle Inc. has become one of the most powerful and positive forces for urban renewal and revitalization in Cleveland. Working together, the people and organizations of this community are making University Circle and its neighborhoods a place to live ... as well as a place to visit ... providing stability, life and vitality to the Circle 24 hours a day, seven days a week.

UCI is also demonstrating that Circle institutions have much to offer their neighbors as well as much to learn from them.

The Circle Center for Community Programs stimulates interaction between Circle institutions and the people who live here.

The Programs bring 60,000 people into the Circle each year ... Children who meet the Thinker and a mastodon, or hear a French horn for the first time. Senior citizens who have come to treasure the richness in their own backyards. And for those who cannot come to the Circle, Center Programs bring the excellence of University Circle to them.

Today, University Circle is proving that a big city can still be a rewarding place ... to live ... to work ... to start a business ... to learn ... to play.

Great cities have always offered society: a focus for achievement and innovation; a standard of excellence and sophistication; a source for the renewal and enrichment of the mind and spirit; and a magnet for the best minds and talents. And they are essential to our economic growth and vitality.

This is University Circle's role in Cleveland. Can you imagine this city without it?

ACTION SESSIONS

May 6, 1983

The results of the Action Sessions strongly indicate that this type of interaction is both necessary and productive. The sessions were organized for 12 to 15 people representing three to five school districts. Each session had a recorder and a group leader.

There is a summary of these sessions following this description. However, in order to get the full flavor of the dynamics, the interaction and the wealth of ideas generated, it is advised that the working papers of each recorder be perused.

Three general conclusions can be drawn about the Action for Conference I: Ignition!

**Conferees applied, massaged and reacted to much of the information and many of the issues raised by the four presentations on May 5....to concerns about education in general and to specific local school situations.

**More time for these groups to interact has been a major suggestion from many conferees as the Steering Committee plans the remaining four programs.

**Networking began to some extent on May 5-6, and has been occurring as a direct result of contacts made and ideas shared.

The comments listed below constitute the summary of the work done in the sessions. The first one is most important to keep in mind:

It is hard to deal with a single issue in isolation.

About networking: Seeing networking as a positive.
How to get beyond networking - to reach schools not at the conference.
Use the State Department, industries, businesses.
How can we establish credibility so that we can introduce changes needed and visualized?

About long-range planning:
Get school districts committed to planning ahead.
Frustration in some groups because they could not get to the long-range goal....25 years ahead is hard to conceptualize.

Problems are immediate, but solutions are a long way off.
In Action Sessions, we should try to focus mostly on the future as a structure...that could get us away from the present.

About high technology:

Start to decide which teaching tasks can be done best by technology/by humans.
Think of using technology as a positive and an aid to problem solving.
Consider issues like the place of technology in curriculum and in development of the individual, such as social growth.

About school finance:

Parents could be billed individually because some children are more expensive than others to educate.
Close schools, computerize curriculum...have education-on-demand, like a laundrymat.
What should schools really be doing and who should we serve?
How to recognize non-academic needs of children without having to be the agency that must respond and treat those needs.
What is the impact of unionism and staffing in long-range planning?

About unions and staffing concerns:

How to prepare existing staffs for technology-based schooling?
Develop some creative ways for staff development.
Creativity and individualism seen as fads by teachers.
We should deal with own abilities to be resilient before being able to pass it along to the students.
We must learn to be comfortable with change.

In general:

We need to redefine the general purpose/role of schools.
We need to look at the image of public schools in relation to private schools.
There is a commonality of these problems and interests among the conferees that transcends size and geographic location.

(3)

Group Leader: Pat Bernabo

Recorder: Ernie Schwittenberg

May 6, 1983 9:45 a.m. - 12:00 noon

Please underscore or highlight unique, exceptional, creative ideas and perspectives.

MAIN ISSUES (45 minutes)	IMPLEMENTATION IDEAS (45 minutes)	SHARING/PRIORITIZE	NETWORK INFORMATION
Mid-Term: 1) - Funding 2) What to teach, what to drop? 3) Improving instruction - 4) Improving teacher training 5) Image of schools (All were considered immediate to intermediate goals) Long-Term:	Mid-Term: - All are interrelated goals & can not be dealt with in isolation - ~~Some~~ Problems with implementation (1). Tenure OCS lobby. Court decision unions public attitude funding Long-Term: present curriculum 1982 New Mexico Standards certification issues curriculum of College of Education	Mid-Term: - organize to change tenure & certification issues - merit system of ~~teacher~~ for teachers ~~& Principals~~ Long-Term:	
	Some ways around obstacles - better evaluation & supervision - better personnel practices - take on the courts with same		

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May 6, 1983 9:45 a.m. - 12:00 noon

Group Leader: Pat Escamilla

(1)

Recorder: Eric Schattenberg

Please underscore or highlight unique, exceptional, creative ideas and perspectives.

(Problems) MAIN ISSUES (45 minutes)	IMPLEMENTATION IDEAS (45 minutes)	SHARING/PRIORITIZE	NETWORK INFORMATION
Mid-Term: (Attitudes) - Funding methods - a problem for Ohio schools - What do we take out of curr. if we need to add high-tech. areas. (time/$$) - Schools taking on more socialization functions (from other institutions - family, church, etc.) - Does more mean better? Are more courses in math, science, etc. the answer? - How do we focus students to develop student attitudes - Problem of losing middle class kids to private schools - creating a class split in society (Image of public schools) - Public schools are divided - how can they work together? - Need for work on the humanities as well as math and science. - Public schools need to express the confidence of the people. - The problem of connecting up education - tools to the dimensions of people) - Taking the skeptical person, color, poor, the hard. - Problem of the "veteran" teacher growing stagnant **Long-Term:** (Attitudes) - Impact of computers on home study - people getting their kids out of school schools at home - Public vs. private schools - image and reality on quality of students, climate, etc. Is there room for both? - Trend towards private schools for upper class; public schools for low-income. - How to regain support & support on public education. - Black/white issue on private school attendance - IMAGE problem - national, local; local, higher - Relationship between people's perception of local schools and votes for levies - The problem of state equalization - Reduction in evaluation in counties - Relationship of money to child quality (Are they synonymous?) - Problem of kids from the back of	**Mid-Term** - Strengthen programs for the students - stress quality of programs and discipline. **Staff Development** - Develop a negotiated policy to police the quality issue among teachers - Continue to provide or increase in-service monies. Thankfully teachers needs and some them opportunity - Possibly interchange w/ industrial HR people and teachers - Create a team approach with Schools. Increase administrative support for teachers. - Try to create more of a "family-like" climate in our schools. Smaller units - more collaboration **Long-Term** (e.g. move to middle schools from J.H.) - Public promotion of value of schools - what schools can do and what they can not do. - Early assessment programs - Teaching teams might be helpful. - Clustering between school systems and higher ed. institutions - work as teams to collaborate on solving problems. - Involve teachers (veterans) into increasing quality in schools - minimize adversarial role.	**Mid-Term:** - Let's not sacrifice music & the arts to basic skills and technology. - The new state min. standards may not been in line with future societal trends. - Assurance of state funds to allow for planning in school systems. - More realistic collaboration between college and schools in preparing students. Better understanding between them. - Building network between schools, colleges, business & industry, cultural groups, etc. to improve **Long-Term:** education. Include new technology in basic components as well.	

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May 6, 1983 9:45 a.m. - 12:00 noon

Group Leader: Pat Dimond

(2) Recorder: Ernie Schattenberg

Please underscore or highlight unique, exceptional, creative ideas and perspectives.

MAIN ISSUES (45 minutes)	IMPLEMENTATION IDEAS (45 minutes)	SHARING/PRIORITIZE	NETWORK INFORMATION
Mid-Term: - Quality control in education - Banning bad abuse from fine teachers and other personnel. - The role of the school as socialization agent. - Quality of teaching in Colleges of Education. Long-Term:	Mid-Term: Curriculum Issues. - Help students get hooked on thinking rather than facts & Get parents supportive of intellectual pursuits. - Add more time to the school year to increase time on task. - Prioritize curriculum subjects: required add-ons. Perhaps emphasize basic skills (reading, math, etc) 3 days during regular day and add-ons after school & Saturdays. - Explore ways to teaching in such a way that kids get turned on to learning. - Create a climate in school where kids can feel at least some satisfaction from what they do there. (Climate of love) - Provide needed autonomy for teachers and other staff members who are more experienced Long-Term:	Mid-Term: Long-Term:	

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May 6, 1983 9:45 a.m. - 12:00 noon

Group Leader: Nick Gallo

Recorder: Diane O'Brien

Please underscore or highlight unique, exceptional, creative ideas and perspectives.

MAIN ISSUES (45 minutes)	IMPLEMENTATION IDEAS (45 minutes)	SHARING/PRIORITIZE	NETWORK INFORMATION
Mid-Term: (Ranked in Priority) 1. Establishing Priorities 2. Issue of Change 3. Immediate Change in Curriculum	**Mid-Term:** 1. Response to School Control 2. Omission of steps or not weighting the steps in the planning process 3. Time factor 4. Lack of Communication 5. Proper use of Resources 6. Receptive to the Change Process 7. Timing 8. Unrealistic, unstated Expectations 9. Turnover	**Mid-Term:**	Newsletter Onsite Visitation Computer Facility Central site facilitation Skill Sponsored Conferences
Long-Term: (Ranked in Priority) 1. money / Scheduling 2. Issues of Authority / Burnout 3. Curriculum 4. Presence in Change Process	**Long-Term:**	**Long-Term:**	

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Group Leader: _____

Recorder: _____

May 6, 1983 9:45 a.m. - 12:00 noon

Please underscore or highlight unique, exceptional, creative ideas and perspectives.

MAIN ISSUES (45 minutes)	IMPLEMENTATION IDEAS (45 minutes)	SHARING/PRIORITIZE	NETWORK INFORMATION
Mid-Term: - Curriculum Changes Problem Hom's Texans - Legislatures Cuts Computer Ed. Gifted Dance Educ. * Work Prep w/ Educ w/ needs Action / Determine cut funds. - Marketing - US Based - Appropriate ** Determine when they go to Comp. Based. Pre-students w/ majors with no real training Ops **Long-Term:** - Information Explosion Real to you that we not being smart Enough - Success Teaching / not then - Problem - Identification 20-30 yrs * - Develop Liaison w/ Industry - Career Choices	**Mid-Term:** **Long-Term:**	**Mid-Term:** **Long-Term:**	

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Group Leader: Bill Trost

Recorder: Sandra Loeb

May 6, 1983 9:45 a.m. - 12:00 noon

Please underscore or highlight unique, exceptional, creative ideas and perspectives.

MAIN ISSUES (45 minutes)	IMPLEMENTATION IDEAS (45 minutes)	SHARING/PRIORITIZE	who needs something / anyone doing now NETWORK INFORMATION
Mid-Term: (1-5) 1) Scope of who we serve - age of populations 2) Criteria of a needs assessment 3) Curriculum planning, develop. how to keep it relevant to match present & future technology in all disciplines 4) level of respect for educators 5) mission of schools? to prepare for work or for life Long-Term: (6-25) 6) extended care does school have role in child care beyond school ages + hours 7) financing public education to provide equity throughout population 8) structure + length of school day	Mid-Term: (9) Preparing to live in our world through global education 10) school attendance laws competency testing for higher educ. (11) staff training + retraining (12) Bring minorities into one central culture vs. educ. tailored to indiv. culture (13) staff composition · age · tenure · quality · salary · motivation · supplements · training · pending shortage · race Long-Term: (14) what are schools responsible for (15) Getting public support financially (16) sex equity (17) program evaluation (18) Bond (role) of business + schools (19) impact of computers on educ.	Mid-Term: Long-Term:	

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Group Leader: Bill Trost

Recorder: Sandra Foot

May 6, 1983 9:45 a.m. - 12:00 noon

Please underscore or highlight unique, exceptional, creative ideas and perspectives.

MAIN ISSUES (45 minutes)	IMPLEMENTATION IDEAS (45 minutes)	SHARING/PRIORITIZE	NETWORK INFORMATION
Mid-Term: SCHOOL MISSION educate whole person? what makes an effective school? JOB DESCRIPTION OF SCHOOL who it serves? what it serves	**Mid-Term:**	**Mid-Term:**	Columbia Schools & Battelle Institute project (source: Terry Krivak - BEREA)
Long-Term: REVITALIZE SCHOOLS school personnel issues • job protection ~~(tenure)~~, change • salary schedule w/o longevity • effectiveness of staff • tenure • security vs. mobility and growth • lockstep salaries	**Long-Term:** Transfer of staff within district (involuntary) selling in-service participative decision-making among teachers, administration, community BIEC - Business, Industry, Education Council	**Long-Term:**	Berea doing these! Quality circle

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Group Leader: Bill Trost

Recorder: Sandra Loeb

May 6, 1983 9:45 a.m. - 12:00 noon Sm. Gr

Please underscore or highlight unique, exceptional, creative ideas and perspectives.

MAIN ISSUES (45 minutes)	IMPLEMENTATION IDEAS (45 minutes)	~~SHARING/PRIORITIZE~~	NETWORK INFORMATION
Mid-Term: Revitalize the schools especially the personnel	~~Mid-Term:~~ Now: (1-5 yrs) (1) Reorganize to create excitement (2) Shift pay increases to reward extra commitment (Optional Contract) → Significant salaries for extra curriculars → Per Diem pay for extended service (3) Implement job sharing - part time teaching; business involvement (3a) Involve industry in education to teach and advise and interact.	~~Mid-Term:~~ (4) Provide career options counseling for "disgruntled staff. (5) Provide more education opportunities for teachers. (encourage + support growth)	→ Berea looking at this (SB 133 ?) → Union Carbide in ~~Berea~~ Euclid
Long-Term:	Mid Long-Term: (5-10yrs) (1) Develop a professional reworking of tenure laws (2) Work towards a self policing profession	Long-Term:	

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Group Leader: Bill Trost

Recorder: Sandra Loeb

May 6, 1983 9:45 a.m. - 12:00 noon

Sm. Gr

Please underscore or highlight unique, exceptional, creative ideas and perspectives.

MAIN ISSUES (45 minutes)	IMPLEMENTATION IDEAS (45 minutes)	SHARING/PRIORITIZE	NETWORK INFORMATION
Mid-Term: Describe Schools who should be served what should be taught	Mid-Term: Under 6 ? Over 18 ? What: One culture or Varied cultures	Mid-Term:	School Mission Betelle - Columbia Schools
Long-Term: Funding needs reworking	Long-Term: - Can Voucher system help us - New requirements require more money which isn't there - Determine if disparity is good or bad - Teachers must be more assertive and organized.	Long-Term:	

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[redacted] ideas and perspectives.

Recorder: Lucy Raffo

We had additions from Saturday

* Thursday's Cleveland 2

MAIN ISSUES (45 minutes)	IMPLEMENTATION IDEAS (45 minutes)	SHARING/PRIORITIZE	NETWORK-INFORMATION
Mid-Term: 1 Raise policy grab of "Info Soc" with Indus. solutions 2. Need to broaden approach to ed. to include changing population 3. Life-long learning 4. Must deal with the contradictions in ed (ie consolidation vs diversity) **Long-Term:** 5 Market tracking and learning styles + still maintain access + how do you track process + maintain accountability 6. Redefine ed expectations standards 7. Redefine "staff development" to meet needs of future 8. Funding 9 Community + Schools must	**Mid-Term and Long-Term** 1) Use Trad staff + increase awareness of "tomorrow" 2) Redefine Increase community and share responsibility to educate 3) Look at certification that keeps teachers (academic evaluation) community people with expertise out of classroom **Long-Term:** 4) Improve + correspond evaluation supervision stability + competency 5) Hold to standards for Teachers + Students 6) Improve screening process for hiring good teachers 7) Unions become a part of schools 8. Use state educators to work with business partners	**Mid-Term:** 1 Raise Expectations (standards/certificates for students + profession) 2) New Models for Ed Delivery - involve broad community as classroom + teachers 3) Define Role of Ed. 4) Community involve - make partners + share responsibility **Long-Term:** 1 Ongoing Planning: Keep "asking" what + involve all ed. levels + community - USE TEAM concept 2. Proactive: Plan ahead + permits "up-to-date" planning + evaluation	1) "Make uncertainty (inevitable) your friend" 2) Cleveland High there is Boy Scout Troop is using a local company to teach computer knowledge after school 3) Cleveland: Career Seminar/Fair include a mother and father discussing their roles - draws the largest numbers of students 4) Springfield "Planning" community education *5) Get media into this conference next time! 6) Rural schools are into basic approach to ed. Suburb + City into self-concept, equality + broader basic skills

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Leader- Dr. Sparks
Recorder- Sharon Williams

5-6 83
Nursery
Licen
FEE
Conferences

Sparks invites for networking - purpose - sharing
ideas volunteers
survey - staff development -
- are we able to make the educational transition with the staff the school systems presently have? (leadership)
Reasons a. quality of people going into teaching is relatively low.
b. terrible staff development programs.
— we need to look at strong and powerful staff development programs
@ 2 months in professional development for teachers. 1/3 of teacher time in personal development.
Barriers —
survey - positives on the quality in our educational community is that we have more support from the community for this.
— Texans will want more money for basics for the beginning school year & problem may be that additional money goes to administration not development

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Jerry - total staff use to be 25 yrs
where just waiting for retirement, don't buy
new ideas?

ans - change staff in steps, taking a
fresh a time

disagreement - we as administrators haven't
done a good job in evaluation of our teachers
(staff) - who are we aren't getting rid of when
they aren't performing to a high level.

CSU - teacher education or re-
education - program but we fall through
from management team. Staff
evaluation & long term

Jerry - minority student turnover - retraining
needed, but this can be useful to other
systems who are already dealing with the
changing intelligence levels - evaluation problems

Jerry - time in re-evaluation, administrators
when is the time for this? All
of the requirements for this.

Jerry - have public schools assumed too
many social roles? Is this taking
up our self development time?
development → instead of hardening

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4. central query
scheduling - use differentiated staffing
assignment - can you separate all of
this from operating
days → take kids where they are
& move this along
Ins → are we to educate the whole
child in are notable areas (cognitive)
oriented / teach the facts skills
implementation ideas - part time
-parent work.

9. → need support
for creative & moral support for teachers
from parent community / extend year idea
idea for teachers to collaborate & staff support
internal.

7. query - what is optimal / physically,
social age, buildings, student make-up

8. - query - "kind of support &
understanding in viewing the place
factor to keep the child engaged to
goal - purpose so that the kid "buys in"
time spent at school is more focused
and not "wasted" and leads to more focused

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b. school responsibility - serious problem.

2.

9. query - <u>readiness vs pre-actual</u> position of schools

10. query - goals for education 5-10 yrs. (longer range)

a. critical thinking skills (one new concept for this. I read - but may not be true)

b. global economy

c. expansion of entrepreneurship (not sure how to include this - parent may provide education themselves e.g. video tests

d. @ 3 yrs complete compulsory - but following with complete curriculum; gives extra support need.

e. compressed spectrum recorder because we can listen much faster than we can speak (variable speed playback according to our listening capacity).

11. query - reducing the part aspects of teaching since they are probably going to be taken over by computer and make that a quick process, thus using the most the time teacher can't be

Sharron Wyllie

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teacher teaching of thinking skills.
(12) query - more programs in affective domain

(13) query - more multicultural programs.

Mid-Term - 5 yrs
1. 95% parental involvement
2. staff personal development continually.
3. skills best taught by technology & best taught by peers
4. make schools thinking community schools.
5. mentor - programs
6. taxonomy of teacher competency specifics
7.

G.1 Implementation
1. video tapes for staff development
2. role modeling - practice re-enforcement of what teachers are doing (NETWORKING)
3. induction -
recruitment → screening
& evaluation - mentor & follow up

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c. standardized way of assessing what teacher does in the classroom. Some kind of way.

CIMS → 4. computerized instructional mall system assessment with the teacher.

1. using computer to assess teacher goals & classroom performance.

2. staff development model - schools districts sharing - make this up.

3. More time for staff sharing their own expertise.

a. first — teacher shares his or her area of expertise.

(university gives a credit for continuing education).

3. more regulary scheduling & constructive ness to produce better teachers.

4. Limit use of computer software things for which they were developed.

Use system - BC is to those things for which a computer is really required.

May 6, 1983 9:45 a.m. - 12:00 noon

...p Leader: [illegible]

Recorder: Marian Miller

Please underscore or highlight unique, exceptional, creative ideas and perspectives.

MAIN ISSUES (45 minutes)	IMPLEMENTATION IDEAS (45 minutes)	SHARING/PRIORITIZE	NETWORK INFORMATION
Id-Term: #1 Staff development education for changing educational ideas Acknowledge time: have public schools serve as the main social unit. Are we to educate what parents are to be preserving traditional ability from early years and [illegible] ong-Term: Staff development staff [illegible] [illegible] What is our role to community needs? 3. In what ind school, time, training - studies -p, (do that it need/ change). 1 Community role more like education like	Mid-Term: 1. Staff support internal 2. Use lengthened school year to educate teachers & [illegible] support [illegible] Long-Term:	Mid-Term: Long-Term:	1. CARE - project maybe they could be shared with the target counties

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Group Leader: Kitty

Recorder: Phyllis

Please underscore or highlight unique, exceptional, creative ideas and perspectives.

• Great / Some Radical ideas

MAIN ISSUES (45 minutes)	IMPLEMENTATION IDEAS (45 minutes)	SHARING/PRIORITIZE	NETWORK INFORMATION
Mid-Term: improve CPS district vocational education lifelong learning changing family + lifestyles political clout of educ academics vs training schools as static institution increase government commitment	Mid-Term: define v.e. audience external training ie McDonalds, IBM public relations w/ policymakers	Mid-Term: provide structure for exchange between school districts	→ N.R. has after school care w/ Center Human Services → has N. Central accreditation evaluating whole district grades → N.R. changed levels of schools → Nodle Royalton rotates adm assignments
Long-Term: the problem of the school district as the catalyst coordinating institution to meet the needs of the community and the students, families	Long-Term:	Long-Term:	Read 5-17 83 • Lois upset about many negative P. Chan. comments • Phyllis wanted to be a group leader, not recorder

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* Please underscore or highlight unique, exceptional, creative ideas and perspectives.

Recorder: Phyllis

Implementation

MAIN ISSUES (45 minutes)	IMPLEMENTATION IDEAS (45 minutes)	SHARING/PRIORITIZE	NETWORK INFORMATION
Mid-Term: education as a coordinating agency	Mid-Term: relating to inter-district: - promoting "collective gaining concept" - " "profit - sharing" - pooling financial resources (4) - construction of flexible plant modules to be shared by schools - interdistrict magnet schools - consolidation of districts	Mid-Term:	
Long-Term:	Long-Term: relating to inter-local school-community: - promote values of family experience - expand use of plant - promote interaction among school + home - design p.r. campaign - document community awareness of schools - arrange students' services to community - plan cooperative programs for teachers w/ community agencies, ie. theatres - provide life-long learning	Long-Term:	

(over)

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May 6, 1983 9:45 a.m. - 12:00 noon

3

Group Leader:

Recorder:

Please underscore or highlight unique, exceptional, creative ideas and perspectives.

implementation

MAIN ISSUES (45 minutes)	IMPLEMENTATION IDEAS (45 minutes)	SHARING/PRIORITIZE	NETWORK INFORMATION
Mid-Term:	Mid-Term:	Mid-Term:	
	4 - require parent education		
	- show accountability ?		
	- rent building space		
	- instruct w/ home computers		
	- eliminate duplication of services		
	~~relating to business, industry, higher education~~		
	- define purpose of schooling		
	* - broaden experiences of teachers and administrators in content areas		
	- staff development		
Long-Term:	Long-Term:	Long-Term:	
	- arrange for students' staff service to the school ie responsibility for some maintenance		
	- smaller school districts		
	-		

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Group Leader: Peter

Recorder: Phyllis

Please underscore or highlight unique, exceptional, creative ideas and perspectives.

MAIN ISSUES (45 minutes)	IMPLEMENTATION IDEAS (45 minutes)	SHARING/PRIORITIZE	NETWORK INFORMATION
Mid-Term:	Mid-Term: relating to business, industry, higher education, unions - develop mentorships - offer vocational training in industry - establish network ? * - have a labor-management network - adopt-a-school program from industry	Mid-Term:	
Long-Term:	Long-Term: relating to law, government, politics: * - provide 16 years free education ages 4-20 * - change or abolish certification v - more govt financial assistance * - individualize by child the costs of education, i.e. add surcharge for special services and ~~subsidize~~ discount for contributions	Long-Term:	

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Group Leader: RITA

Recorder: PHYLLIS

Please underscore or highlight unique, exceptional, creative ideas and perspectives.

MAIN ISSUES (45 minutes)	IMPLEMENTATION IDEAS (45 minutes)	SHARING/PRIORITIZE	NETWORK INFORMATION
Mid-Term:	Mid-Term:	Mid-Term:	
	Obstacles to implementation and possible solutions.		
	1. No long term national or state or local commitment to education a) PR with policy makers (Board members, key business reps, labor leaders, politicians) b) political activism		
	2. Segmenting of schooling into levels (eg. Elem. Ed., Jr. Hi., Hi School) a) communication b) inservice c) change in grade structure d) change of certification e) rotation of staff f) use experience of existing organizations g) sharing of materials		
	3. Contraints of school finance a) change tax structure b) problem solve with legislators		
Long-Term:	Long-Term:	Long-Term:	
	4. Condition of City of Cleveland school district a) sharing b) influence state to encourage communication among districts		
	5. Competition a) Co-operation		
	6. Perpetuation of traditional educational ideas in colleges and universities. a) Cooperative effort among all levels * b) Abolish single salary scale for all disciplines c) change job descriptions * d) abolish certification and tenure		

Group Leader: [redacted]

Please underscore or highlight unique, [redacted] creative ideas and perspectives.

Recorder: _____

MAIN ISSUES (45 minutes)	IMPLEMENTATION IDEAS (45 minutes)	SHARING/PRIORITIZE	NETWORK INFORMATION
Mid-Term:	Mid-Term: - decentralize functions * teach global curriculum, based on space-age information ? * change relationships	Mid-Term: intensive and extensive of schools & political leaders	
Long-Term:	Long-Term:	Long-Term:	

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Dr. Joe Rogus
Nancy Flamant

Brainstorming Session

long & short term

Short

- Declining Enrollment → facing an aging
- with adequately trained personnel
- Lack vision →
- Administrator Leadership
- for responsive
- risk change
- Create present systems

Midterm

- Scope of Education; Socially, Psychologically, Cognitively
  1. content
  2. School's purpose
  3. Technology
- Finance - Local effort Control
- Age ranges of school population
- * Need to identify community's educational goal
- * Prepare teachers for teaching adults
- Adult retraining/educational needs
- Preschool needs
- Nurturing staff change
- Develop intellectual interchange, spirit and communities
- Defining change and setting a course
- Involvement with greater community - tapping expertise, including policy makers, ownership
- * Joint planning
- * Retraining a master school staff

Long Term

- * Preparation for future society - difficult
- Public perception of Education
- Is there a better way or system?
- Technological - Service Acceptance Ramifications for schools
- What effect do federal, state regulation have on future district decisions? Result: a variety of options

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Group Leader: [redacted]

Recorder: Nancy Hayward

Please underscore or highlight unique, exceptional, creative ideas and perspectives.

MAIN ISSUES (45 minutes)	IMPLEMENTATION IDEAS (45 minutes)	SHARING/PRIORITIZE	NETWORK INFORMATION
Mid-Term: 1) Scope of curriculum a. Content b. School's purpose c. Technology 2) Finance 3) Effect of federal/state regulations 4) Preschool Needs 5) Nurturing Staff Change Long-Term:	Mid-Term: ① Scope of Curriculum - Should a core curricula be developed - National and/or state? - Quality of Education 1. What should we teach? 2. How should it be taught - What outcomes are wanted for the student? - What is the focus of curricula, Academia, Social? Long-Term: - Does the community (greater) have the knowledge or know what it wants for students educationally? - Better use of all forms of technology 1. Free teacher for individualization 2. Resource	Mid-Term: ② Finance - Salaries - Creative ways to entice quality staff - Importance of subject area expertise, Math, Science - Effect of large numbers of teachers retiring in next five years. Long-Term: ④ Effect of federal/state regulations - Flexibility of policy - Schools cannot contain lock-step method 1. Constraints of professional/union groups 2. State Regulations - Retirement	⑤ Nurturing staff change - Role as leaders in school/community - Staff development 1. Carve out time for in-service. 2. Be creative *3. Reward change agents.

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Dr. Joe Kegan
Nancy Clement

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Issue	Objectives	Activity	Constraints/ Dec
Scope of Ed	1. to clarify meaning of basics.	• personal vs. Society	• Attitudes of staff • time change •
	2. to examine "fit and responsibility" of time.	• create staffing patterns	
	3. to define roles and sense.	• Work with/ with in elementary School	
	* 4. To define new role as leadership a. internally b. community	• work with a school	
	5. To assess present program effectiveness	• expand work groups	
	6. to define place of technology in small curriculum	• Create Campaign Educational campaign	
	7. to train staff in relation to competencies	• identify what can be done by people and by	
	8. to assist parents and community make valuable choices.		
9. To operate staff about what necessary do we look at the future	9. to address new ed. questions		
10. To address multicultural ed. question			
11. To identify values			

• Basic Communication Skills
• Rights & Responsibilities
• money for inservice
• attitudes of staff

May 6, 1983 9:45 a.m. - 12:00 noon

Group Leader:

Recorder:

Please underscore or highlight unique, exceptional, creative ideas and perspectives.

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MAIN ISSUES (45 minutes)	IMPLEMENTATION IDEAS (45 minutes)	SHARING/PRIORITIZE	NETWORK INFORMATION
Mid-Term:	Mid-Term:	Mid-Term:	
Long-Term:	Long-Term:	Long-Term:	

Recorder:

Please underscore or highlight unique, exceptional, creative ideas and perspectives.

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MAIN ISSUES (45 minutes)	IMPLEMENTATION IDEAS (45 minutes)	SHARING/PRIORITIZE	NETWORK INFORMATION
Mid-Term:	**Mid-Term:**	**Mid-Term:**	
Long-Term:	**Long-Term:**	**Long-Term:**	

LOCAL ACTION PLANS

One of the major goals of "Fueling the Education Explosion" is to have each school district planning team develop methods for involving others in their local districts and communities in the project. During the Ignition Conference, there was little time for teams to work toward this goal; however, six teams were able to brainstorm some techniques and strategies to use at the local level.

Since May 5-6, a number of the ideas presented in the Local Action Plans have been carried out or are scheduled for implementation in early Fall.

As the F.E.E. project continues over the next two years, the sharing and networking about the implementation of such plans...and new ideas.... will become on the most exciting parts of the project. As a start toward that end, six of the Local Action Plans that resulted from Conference 1 are included in this report.

LOCAL ACTION PLANS

District or Organization: _____

GOALS: To develop specific strategies to keep your team functioning at the local level;

To consider some ways you can involve others in your school and community.

Questions you might find helpful:

How do we create awareness?

We will meet with our superintendent to share with him our 9 long and short term goals. We will offer to function as leaders of a district planning team to reach the follwing goals:

1. Flexible scheduling (day-year)
2. Restructuring of vocational offerings
3. Expansion of staff development activities
4. Development of futuristic inservice (Administrators)
5. Unifying school programs/activites by building upon commonalities
6. Development/piloting of different grade level groupings
7. Move from planning to process using collaboration/participatory decision making
8. Long-range planning for outside field trips/assemblies, etc.
9. Use of community resources (i.e. E & E school year program)

Who should be involved?

Initially the district participants in F.E.E. project workshops.
Then, with our district leadership's support, commitment in all levels will be involved (elementary, secondary, parents teachers, administrators, students, community)

What kind of assistance can be provided through networking and the F.E.E. project?

Sharing of ideas, resources and support

THANK YOU FOR PARTICIPATING!

LOCAL ACTION PLANS

District or Organization: _____

GOALS: To develop specific strategies to keep your team functioning at the local level;

To consider some ways you can involve others in your school and community.

Questions you might find helpful:

How do we create awareness?	Who should be involved?	What kind of assistance can be provided through networking and the F.E.E. project?
Personal commitments Sharing ideas with other staff members Inject idea into existing committees Create a thinking environment among key leaders	Teachers Parents Citizen leaders	Money Materials Communications of ongoing programs

THANK YOU FOR PARTICIPATING!

LOCAL ACTION PLANS

District or Organization: _____

GOALS: To develop specific strategies to keep your team functioning at the local level;

To consider some ways you can involve others in your school and community.

Questions you might find helpful:

How do we create awareness?

1. Make one school the pilot project
2. Motivate the teaching staff
3. Inservice staff
4. Involve PTA members
5. Involve administrative staff
6. Use staff newsletter

Who should be involved?

What kind of assistance can be provided through networking and the F.E.E. project?

Speakers
Teacher exchanges
Sharing research
Sharing current literature
Workshops

THANK YOU FOR PARTICIPATING!

LOCAL ACTION PLANS

District or Organization: _____

GOALS: To develop specific strategies to keep your team functioning at the local level;

To consider some ways you can involve others in your school and community.

Questions you might find helpful:

How do we create awareness? Who should be involved? What kind of assistance can be provided through networking and the P.E.E. project?

1. Innovative staff development programs

2. Development of a program planning format that will provide a forum for brainstorming policy. This would include district committees charged with specific responsibilities for submitting recommendations and alternative solutions to the superintendent to facilitate the decision-making process.

THANK YOU FOR PARTICIPATING!

District or Organization: _____

GOALS: To develop specific strategies to keep your team functioning at the local level;

To consider some ways you can involve others in your school and community.

Questions you might find helpful:

How do we create awareness?	Who should be involved?	What kind of assistance can be provided through networking and the F.E.E. project?
Article in monthly tabloid	Supt. and Asst. with Board involvement	Printed materials of speeches and compiled results
PTA & service organizations: use of State Dept. film on excellence. Network of leaders in community or a regular mailing list	PTA and business or industry leaders in larger community Central Admin.-Board and leaders in business and industry	Assistance in reproducing slid-tape show of the State Dept. level and use of local education level literature
Large and small staff meetings	Non-certificated and certificated admin. and staff	Same
Board and Admin. retreat dealing with excellence and future	Board members and administration	Same
Development of futurist committee	Citizens, Board members, staff and Admin.	Same

THANK YOU FOR PARTICIPATING!

LOCAL ACTION PLANS

District or Organization: _____

GOALS: To develop specific strategies to keep your team functioning at the local level;

To consider some ways you can involve others in your school and community.

Questions you might find helpful:

How do we create awareness?	Who should be involved?	What kind of assistance can be provided through networking and the F.E.E. project?
Needs assessment Develop data to clarify perceptions and opinions Open dialogue	Ultimately all who will be affected	Networks

THANK YOU FOR PARTICIPATING!

PARTICIPANTS

Conference I: Ignition!

School districts, universities, colleges, foundations and industries who are represented by participants are listed below.

School Districts

Berea
Columbia
East Cleveland
Cleveland
Elyria
Erie County
Euclid
Fairview Park
Finneytown Local
Gahanna Jefferson
South Euclid-Lyndhurst
Maumee
Newbury
North Royalton
Orange
Painesville
Parma
Pickaway-Ross Vocational Center
Shaker Heights
Sheffield-Sheffield Lake
Vandalia-Butler
Cleveland Heights-University Heights
Marion
Richmond Heights
Solon
North Olmsted
Beachwood
Cuyahoga County
Hamilton County
Toledo
Lake County

Other Organizations

Lorain Community College
John Carroll University
Cleveland State University
Ohio Board of Regents
Ohio State Department of Education
University Circle, Inc.
St. Joseph's Academy
Cleveland Foundation
The Standard Oil Company (Ohio)
The Martha Holden Jennings Foundation
General Electric Co.
Gund Foundation
University of Dayton
Ohio Association for Gifted Children
Federation for Community Planning
Concerned Citizens
Institute for Educational Leadership
Washington University, St. Louis
Hunter College Campus Schools, New York City
International Platform Association
Premier Industrial Corporation
U.S. Information Agency

FUELING THE EDUCATION EXPLOSION

Ignition! Conference Participants

Beachwood City Schools
- Ed Zaharewicz
- Mimi Sobel, Program Services

Berea City Schools
- J.R. Andrisek, Superintendent
- Tom Yates, Administrative Assistant
- Vicki Birkenough
- Terry Krivak, Personnel
- John Evans, Director of Elementary Education

Cleveland City Schools
- John Nairus, Director of Compensatory Education
- Shirley DeLaine, Director of Human Relations
- William Bauer, Supervisor of Mathematics
- May Ethel White

Cleveland Heights-University Heights City Schools
- Dr. A.J. Abramovitz, Superintendent
- Donalene Poduska, Board Member
- Russell Baron, Board Member
- Robert Soltz, Board Member
- Nancy Nicoll, PTA Council
- Rosemary Mannino, Elementary Principal
- Katie Shorter, Elementary Principal
- Jim Cipolletti, Junior High Principal
- Awilda Clemons-Hall, Supervisor/Elementary
- Tom Ferguson, Administrator of Budget/Business Practices

Cleveland State University
- Dr. Harrison Means
- Dr. Lewis Patterson
- Dr. Thomas Frew
- Dr. Carol Takacs
- Dr. G. Cartledge
- Dr. Diane Stupay
- Dr. Richard McArdle, Dean/College of Education

Columbia Schools
- J.S. Breese, Superintendent

Cuyahoga County Board of Education
- Deborah O'Brien, Coordintor/Gifted and Talented

East Cleveland Schools
Dr. Rondle Edwards, Superintendent
Cathy Whelan, Assistant Principal/High School
Judy Kirman, Assistant Principal/High School
Ruth Johnson

Elyria City Schools
Merna Livermore, Supervisor/Curriculum-Instruction
John Raber, Principal
Bernell Helm, Supervisor/Secondary

Erie County Schools
John Crecelius, Supervisor/Secondary Education
Peter Guerrera, Coordinator/Gifted and Talented
Sharon Watkins, Supervisor/K-2

Euclid City Schools
Dr. Ernest Husarik, Superintendent
Dr. William Dodds, Director of Instruction
Denise Grace-Turek, Board Member
Dr. Shirley Nurmi
Paul Kapostasy, Principal

Fairview Park City Schools
Dr. John Babel, Jr., Superintendent
James Dow, Assistant Superintendent

First Congregational Church, Akron
Dr. Gabe Campbell
Sandy Campbell

The Foundation Center
Jeanne Bohlen, Director

Gahanna-Jefferson City Schools
Roger Viers, Superintendent
John Allen, Assistant Principal
Barbara Denner, Supervisor/Elementary
Gerald Hughes, Principal

The Gund Foundation
Henry Doll

Hamilton County Schools
Nancy Hamant, Supervisor/Gifted and Talented

John Carroll University
Dr. Sally Wertheim
Dr. Raymond LeGrand

Kent State University
Averil McClelland

Lake County Schools
Dr. Des Dandalides, Coordinator/Communications
Lynn Loucks, Supervisor/Gifted and Talented
Sarah Loucks

Lorain County Community College
George Simmons
R. McCarbery
N. Zentos
Jeremy Rakowsky

Marion City Schools
Dr. Don Carriker, Assistant Superintendent

Maumee City Schools
David C. Abbott, Superintendent
Roseann Abbott
Barbara Laird
Claire Jacobi, Administrative Assistant

Medina County Joint Vocational Education Center
Dennis Hoops, Director/Career Education

Newbury Board of Education
Robert Bowden, Superintendent
Judith Embrescia, Principal
Joan Pettibone, Citizens' Advisory Committee

Nordonia Hills Schools
John Bushman, Supervisor

North Royalton City Schools
Jack Thomas, Superintendent
Charles Dolce, Principal
J. Patrick McCann, Principal
Charles Gibson, Principal
Pamela Rigg-Metcalfe, Principal

Ohio Board of Regents
Elaine Hairston, Director/Special Programs

Ohio State Department of Education
Dr. Mary Poston, Director/Department of Elementary and Secondary Education
Dr. James Jilek, Consultant/School Improvement
Hazel Flowers, Director/Division of Equal Opportunities

Orange City Schools
John Stafford, Superintendent
Bill Scoggan, Principal
Gail Allison, Principal

Painesville City Schools
David Morse, Director
Brent McGarvey, Principal
Donald Ehas, Principal

Parma City Schools
Dr. Edward Karns, Superintendent
David Smallwood
Marsha Harrison, Department Superintendent
Joseph Charnigo, Assistant Superintendent
David Laurenzi, Principal
Mary Schleicher, Career Development

Pickaway-Ross Vocational Center
Curt Heady, Board of Career Development
Paul Leich
Jim Lungo
Mike Hafner
Ed Shiller

Richmond Heights City Schools
George Bowdouris, Superintendent

St. Joseph's Academy
Judith Cauley, Principal

Shaker Heights City Schools
Dr. Mark Freeman, Director/Research, Development and Evaluation
Bill Jarvie, Assistant Principal
Bob Mohney, Unit Principal
Lucille Burkett, Director of Physical Education
Jean Sylak, Elementary Principal

Sheffield-Sheffield Lake Schools
Dr. Theodore Greener, Superintendent
Dorothy Greener, Pupil Personnel
Dr. David Mertz, Coordinator/Curriculum and Instruction
Mr. Jack Snyder

Solon City Schools
Rudy Libertini, Administrative Assistant

The Standard Oil Company (Ohio)
Sondra Hardis, Program Associate

South Euclid-Lyndhurst City Schools
Dr. Henry Kurdziel, Superintendent
William Burcham, Director/Curriculum
Joseph Leonetti, Principal/High School

Toledo City Schools
Dr. Constance Robinson
Mr. Thomas Bollin Director/Elementary
Mr. Craig Cotner

University Circle, Inc.
Joseph Pigott, President
Gilbert Brooks, Vice-President
Carol Griffith
Virginia Boulden
Edie Ziska
Jerry Maddox

Vandalia-Butler Schools
Phil Price, Superintendent
Sharon Pursol-Zimmers
Phil Stephenson

Western Reserve Historical Society
Karen Grochau

International Platform Association
Dan Moore
Betty Moore
Rosa Lobe
Sam Lobe

Premier Industrial Corporation
Bill Stenzel, Vice President

Teacher-Volunteer
Vicki Borden, Cleveland Heights

GROUP LEADERS AND RECORDERS

Dr. Robert Sparks
Lopata Professor of Chemical Engineering
Washington University, St. Louis

Dr. Joseph Rogus
Kuntz Professor of Education
University of Dayton

Dr. Patrick C. Bernardo, Deputy Superintendent
Cleveland Heights-University Heights City Schools

Dr. Mark Freeman, Director
Research, Development and Evaluation
Shaker Heights
and
Coordinator, Ohio Site
Education Policy Fellowship Program
Institute for Educational Leadership

Ms. Sandra Loeb, Coordinator
Career Development Programs
Cleveland Heights-University Heights City Schools
Shaker Heights City Schools
Warrensville Heights City Schools

Ms. Shirley DeLaine, Director
Human Relations Division
Cleveland Public Schools

Rita Shtull, Supervisor
Secondary Education
Cleveland Heights-University Heights City Schools

Larry Peacock, Principal
Coventry Elementary School
Cleveland Heigths-University Heights City Schools

Dr. Ernest Schuctenberg, Assistant Dean
College of Education
Cleveland State University

William Trost, Teacher
Shaker Heights City Schools

Ms. Deborah O'Brien, Coordinator
Gifted and Talented Programs
Cuyahoga County Board of Education

Ms. Nancy Hamant, Consultant
Programs for Gifted and Talented
Hamilton County
Cincinnati

Ms. Alice Piteo
Gifted and Talented Programs
Wiley Junior High School
Cleveland Heights-University Heights City Schools

Mrs. Muriel Jefferies, Resident
University Heights

Ms. Kay Raffo, Senior Planning Associate
Federation for Community Planning
Cleveland

Ms. Bernice VanSickle, Assistant Principal
Cleveland Heights High School

Ms. Phyllis Benjamin, Coordinator
Title IX Programs
Cleveland Heights-University Heights City Schools

Dr. Nicholas Gallo, Executive Director
Department of Pupil Services
Cleveland Heights-University Heights City Schools

Ms. Sharron Williams
Gifted and Talented Programs
Cleveland Heights-University Heights City Schools

EVALUATION

"FUELING THE EDUCATION EXPLOSION"

Conference I: IGNITION!

Sixty-seven (67) conference attendees submitted evaluation forms--11 superintendents, 15 district representatives, 10 principals, 3 teachers, 5 board members, 3 community/public relations, and 20 "others" (14 administrators and 6 university professors). Three program characteristics were rated by the above respondents on a five point scale where 5 is high, and 1 is low. Respondents uniformly rated the conference in the high range. In particular: "The objectives were well-defined - 4.2; "The handouts were informative" - 4.0; and "The presentations and activities were beneficial" - 4.5.

Attendees were asked to add suggestions for future meetings and general comments. Suggestions and helpful comments included a number or requests for more time to discuss the topics and for small group interaction. A range of future topics emerged as well.

General comments were uniformly in praise of the quality of the program and presentors. In simplest terms this can be summarized by one attendee's comments, "Excellent! Keep it up!"

The Steering Committee has found all of the comments and suggestions helpful while planning the events in Conference II: Intelligence and Schooling.

ACKNOWLEDGEMENTS !

Many people with various expertise have helped to develop this conference. Without the enthusiastic efforts of the following people, ignition could not have occurred.

Dr. Allan W. McLeod, Chairman
Department of Counseling Services
Hunter College Campus Schools
New York City

Mrs. Nancy Maki, Secretary
Gifted and Talented Programs
Cleveland Heights-University Heights City Schools

Ms. Sondra Hardis, Program Associate
The Standard Oil Company (Ohio)
Cleveland

Dr. Richard McArdle, Dean
College of Education
Cleveland State University

Ms. Edie Ziska, Coordinator
Handicapped Programs
University Circle, Inc.
Cleveland

Ms. Jean Joseph, Director
School-Community Program
Cleveland Heights-University Heights City Schools

Charles Burtonshaw
Downtown Holiday Inn
Cleveland

Jerry Maddox
University Circle Inc.
Cleveland

Susan Gardner
Ohio State University

Anne Stenzel
U.S. Information Agency

Rita M. Price
International Platform Association
Cleveland Heights

Charlene Reed-Munjell, Research Associate
Office on School Monitoring
Cleveland